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MONTHLY REPORT

OF THE

DEPARTMENT OF AGRICULTURE

FOR

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MONTHLY REPORT.

STATISTICAL DIVISION,
DEPARTMENT OF AGRICULTURE,
Washington, D. C., June 20, 1876.

SIR: I respectfully report for publication a description of the exhibits made by the Department of Agriculture at the Centennial Exhibition; a report of the condition of the crops in June, with estimates of areas planted; and sundry minor statistics.

J. R. DODGE,
Statistician.

Hon. FREDERICK WATTS,
Commissioner.

CENTENNIAL EXHIBITS OF THE DEPARTMENT OF AGRICULTURE.

The participation of the Government in the greatest exhibition of the age, and the prominence of an interest in which half the people of this nation are directly engaged, render necessary positive and efficient effort of the Department of Agriculture to illustrate national resources, production, and progress in rural arts. With a regard for economy more in accordance with the demand of the times than with the importance of the subject or occasion, the Department's proportion of the first appropriation for the Government building and Department exhibits was but a tenth of all, and of the second, nothing. The allotment of space, 6,400 feet, 160 by 40, was ample for the limited means available for filling it, and it was duly divided into sections to afford opportunity to the several divisions of participating in the Exhibition. The result, as seen in the collection at Philadelphia, has secured a favorable preliminary verdict, both of press and people, and is acknowledged to be highly creditable to the Department and interesting and instructive to the visitors, native and foreign.

As a current record of Department work, to utilize and perpetuate which the monthly report was established, a brief description of these exhibits is presented, which will also serve to direct the inquiries of the casual visitor to points of personal or general interest, and to systematize the labors of the press reporter, to guide his pencil or refresh his memory, for the benefit of that great class of American farmers who cannot personally inspect the exhibits.

The location of the Department in the Government building is in the

transept which projects southwestwardly from the center of the building, one side of which is occupied by the Post-Office Department. The various branches and specialties of the Department service are represented more or less fully in the collection.

ENTOMOLOGICAL DIVISION.

The division of entomology, as organized and conducted, involves the curatorship of the Agricultural Museum, which has been increasing in its attractions during the past ten years. It occupies in the Department a hall 102 by 52 feet, and in the Centennial allotment a space of 60 by 40 feet. The material of the various lines of exhibit is only in part from this museum, being in some of them almost entirely from new collections; and the arrangement, with new cases and fixtures and other accessories of exhibition, is more complete and systematic than in the old collection. The entomologist and curator, Townend Glover, makes a valuable exhibit in economic entomology of insects arranged with reference to the plants or products they infest, and also presents his illustrated catalogue of insects, nearly three hundred copper-plates engraved by his own hands, illustrating by figures insects of all orders in entomology. The exhibits of the museum he assigned to the assistant entomologist, Charles R. Dodge, whose collections of grains, textile fibers, and paper material, are of great interest and practical value. These divisions use sixteen cases, four of which illustrate the cereals and tobacco; three are occupied with fibers, four with fruits, one with insects, and four with insectivorous birds and domestic poultry.

These classes of objects are an ascending series, beginning with the products of the earth, as grains, fruits, tobacco, cotton or wool; next, the insects which prey upon them and blast the hopes of patient labor; and, third, the birds which restore the balance, and render successful production possible by limiting the depredations of the countless hordes of insect spoilers.

The arrangement of the products of agriculture is based upon an equally natural system. First, the raw material, its specific kind and the geographical range of each; then its manufactures in regular series, from the slightest manipulation to the most skillful mechanical processes and their ultimate results, whether in tissue, texture, or other form of completed elaboration.

The first case in the collection displays about one hundred and fifty specimens of tobacco, one hundred samples in the leaf from eighteen States, including the popular named varieties in different modes of curing, ranging in quality from the cheap shipping qualities to fancy cigar-wrappers worth $4 per pound. Samples are also shown illustrating the manufacture of smoking and chewing tobacco in all its specialties. Specimens are labeled to show the State in which they are grown.

There are three cases for the display of about nine hundred samples of grain, comprising a collection of various cereals, selected expressly for the exhibition by agents of the Department, arranged in glass jars a foot in height, and so placed that a comparison of well-known varieties from different States can easily be made; next, one hundred and twenty-five samples of Indian corn, displayed in the ear upon black tablets, and arranged for comparison of differences between northern and southern grown corn, and equal variations and contrasts of varieties grown upon the same line of longitude. To make the grain collection complete, upward of one hundred samples of manufactured products of cereals are shown, illustrating processes of manufacture in great

variety, including recent remarkable improvements, and the fancy products, once sought only by the epicure, which are rapidly making their way to all well-supplied tables.

The collection of fibers, both textile and paper-making, if not exhaustive, is representative, and broadly illustrative of these important branches of mechanical extension of the raw material. About five hundred samples of wool are shown, representing the principal breeds established in this country, with their crosses of every grade. Though a majority of the samples have a growth of but ten months, they are generally fine specimens, making an exceedingly interesting exhibit. The system of illustrating processes of manufacture by a series of their products enables the farmer to see, in any style of piece-goods, shawls, carpets, or flannels, the particular grade of wool which enters into its composition and the various processes by which the special result is accomplished. In the cotton collection there are about one hundred and twenty samples, showing the principal known varieties cultivated, both in lint and seed. Here the processes of manufacture are likewise shown, from the raw material, through all its ten or twelve changes, to the manufactured fabric, as well as the numerous varieties of fabrics made from this textile. Flax and jute are shown in the same case. A great variety of miscellaneous fibers, including silk, ramie, flax, cotton, hemp, asclepias, and many of the fibers from the far West, of little utility in manufacture, and yet interesting as showing the resources of the country, are also presented.

A valuable collection of paper materials, about one hundred samples, exhibits, from the raw material to finished paper, the manufacture of bogus, scrap, and rope manila, straw, book and colored paper, flat and linen paper, besides a number of kinds of material not in general use, such as okra, spartina, ramie, yucca, and others. Wasp-paper is shown as a sample of the first manufacture of paper—by the present process—from wood.

The exhibit of models of fruit and vegetables, made of plaster painted in oil-colors, fills four cases and a part of two others. In all it comprises nearly three thousand specimens, illustrating about one thousand varieties of the apple, six hundred of the pear, fifty of the potato, besides plums, cherries, melons, pumpkins, and roots. The amount of space allotted was not sufficient for the display of the entire collection. The apples include several specimens of each of the standard varieties, like the Baldwin, Northern Spy, etc., to show the characters assumed by the same kind when grown in different parts of the country. There are also some of the distinctively southern apples, such as the Hilton, Nickajack, Shockley, etc. Among the pears is a small collection of some varieties new or little known, from original specimens contributed by Ellwanger & Barry. The miscellaneous models are samples of seedling strawberries grown by the Department; twelve different kinds of melons, including all that are usually raised for market; a large pumpkin, the original of which weighed 122 pounds; and numerous vegetables from Northwest Minnesota and other remote parts of the country.

The collection of economic entomology, filling twenty-four glass-covered drawers or boxes, occupies one high case next to the collection of small birds. Over one thousand specimens are exhibited, and these are arranged, not according to their classification, into families, genera, &c., but with regard to the food-plant, or more particularly the farm-product injured or destroyed by them. Thus, under the head of potato the various insects known to injure the plant, in root, stalk, leaf, or fruit, are shown from egg to perfect insect, when practicable, accom-

panied with samples illustrating the mode of injury. Thus, cotton tobacco, corn and other cereal products, the cucurbitaceous plants and plants of the kitchen-garden, fruit-trees, shade and forest trees, are all represented by the various insect-pests preying upon them. Other cases illustrate the insect-pests of man and cattle, the foes of the household and the larder, the silk-producing insects, and the gall-makers, while others show the principal insects that are beneficial to mankind, either by destroying noxious species or in the capacity of scavengers. The collection is not, by any means, complete, but forms the nucleus of a strictly "economic collection of entomology," which to the farmer is of more practical value than any other method of arrangement that can be adopted.

In addition to the above, a collection of three hundred colored plates on copper are shown, on which upward of seven thousand figures of the injurious and beneficial insects of the United States are illustrated.

Having referred to the various lines of production presented in the museum, and to the insects that prey upon it, we naturally come, in accordance with the classification adopted, to the third branch of the collection, the cases containing birds, intended to exhibit to the farmer such as are beneficial, as destroyers of obnoxious insects, as well as those which feed upon his fruits and grains more or less exclusively. The character of the birds is indicated in each case by the mark upon the perch or label, white indicating purely insectivorous birds, black those of wholly pernicious habits, and both colors the relative proportion of each element in those possessing more or less marked proclivities for a mixed diet of insects and fruits in their season. A little box in close juxtaposition to each affords the means of judging of these characteristics by an exhibit of the dried contents of a full stomach—evidence very strong, if not conclusive, in each case.

The cases containing poultry are intended to show to poultry-fanciers and farmers true type-specimens of the various breeds, mounted by the taxidermist so as to exhibit prominently the peculiarity of each breed as to size, form, and color, so that the farmer, when he buys a new breed, can ascertain whether it is true to name, and judge whether it is what he wants for his own locality or to improve his old stock. The collection includes all the principal varieties, both native and foreign. There is also a collection of pigeons, and about thirty specimens of ducks, representing the crosses between the common domesticated and the mallard.

BOTANICAL DIVISION.

The collection of the botanist, George Vasey, is confined to forest-products. It presents nearly a complete exhibit of the forest-trees of the United States. There are about four hundred species and varieties, each represented by sections of the trunk and corresponding botanical specimens of the foliage, flowers, and fruit. The sections are two feet long, in two pieces, one showing the outer surface of bark and the other sawed longitudinally and dressed to show the character of the grain and wood. Above each section, inclosed in a frame, is the corresponding botanical specimen of foliage, flowers, and fruit. This collection was obtained through twelve collectors in different parts of the Union. The greatest care has been taken to have all the specimens authentic and true to name. It is a remarkable and striking display of the forest-wealth of our country. There are fifty species of semi-tropical trees of Southern Florida, including five species new to our flora. There are twenty-five species from Texas, and thirty species from Southern California

and Arizona, including some of the rarest and most interesting trees of that country, particularly the tree Yuccas and a recently-known Palm. There are fifty species from the Pacific slope of California, and ten or twelve from Oregon, and thirty from the Sierra Nevada Mountains of California, including large sections of some of the noblest coniferous trees of the world, such as the Sugar-Pine, the Douglas Spruce, the Silver Fir, and others. From the mountains of Utah and Colorado there are twenty-five to thirty species. From Illinois and the Western States, fifty; from Vermont, twenty; from Virginia, fifty, most of which were obtained from the old Mount Vernon estate of General Washington. The Southern States, exclusive of South Florida, contribute about ninety species. The Oak family is represented by thirty species, including the famous live-oak of the South, the various white and black oaks, both of the eastern and western portions of the continent. The Pine family is also represented by thirty species, of which more than half are peculiar to the Rocky Mountains and western coast. Of Spruces there are sixteen species, and of other conifers about twenty.

GARDENS AND GROUNDS.

The superintendent of gardens and grounds, William Saunders, who is also in charge of the Department collections at the Centennial, exhibits a plan of the grounds of the Department at Washington, with a catalogue chart of the different orders represented in the Arboretum, and sundry photographic views of different sections of the grounds.

MICROSCOPY.

The exhibit of the microscopist, Thomas Taylor, consists of about five hundred water-color drawings, the larger proportion representing the leading types of the genera of microscopic fungi; another section of the exhibit presents the results of original investigation upon chemical tests for flax, cotton, ramie, silk, wool, hair, and both animal and vegetable cellulose; and still another series, illustrating the principal vegetable starches to the number of about one hundred varieties. These drawings present highly magnified views of all these microscopic objects, including those most important in economic mycology, especially the fungi commonly known as molds, so destructive to vegetation. The edible and poisonous mushrooms are distinguished in one class of these drawings. The mycologist proposes to make a collection of all the known edible mushrooms of the United States, of which descriptions will from time to time appear in the Monthly Report.

CHEMICAL DIVISION.

The chemist of the Department, William McMurtrie, presents the following description of his exhibits:

Agricultural chemistry may be defined to be the study of the chemical properties and relations of soils and fertilizers, and of those agricultural and horticultural products resulting from their manipulation, the value of which depends upon their chemical composition and the methods for the utilization of which involve chemical processes. This may on some accounts be considered a somewhat comprehensive definition, but it embraces only such matters as legitimately fall within its scope, and it covers the ground laid out by the chemical division of the Department of Agriculture for the collection to be shown in the Government exhibit in the International Exhibition of 1876, designed to illustrate the objects and ends of the division, viz, the collection and dissemination of information of agricultural interest and of a chemical character.

Following the general idea thus enunciated, the materials collected and at present on exhibition in Philadelphia, are divided into two grand divisions, as follows:

1. Soils and fertilizers.

2. Vegetable products, the value of which depends upon their chemical composition, and the methods for the utilization of which involve chemical processes.

In addition to the materials included in these two grand divisions, the collection contains a series illustrative of the various steps involved in the manufacture of butter and cheese.

The soils and fertilizers are appropriately grouped, as follows:

1. Soils from different geological formations.

2. Known rocks, with samples of the virgin soils formed from them by their disintegration and decomposition.

3. Marls—a group which may be subdivided into calcareous or shell marls, greensand marls, and phosphatic marls.

4. Mineral fertilizers, consisting of phosphatic rocks and limestones.

5. Vegetable and animal fertilizers.

6. The combination of the natural fertilizers to produce the manufactured or artificial fertilizers and a series of specimens of these products found in American markets.

The soils from the geological formations of different ages were collected under the supervision of Prof. George H. Cook, State geologist of New Jersey, and illustrate very fairly the character of the soils common to the sections belonging to the several formations represented.

The second subdivision of soils—those formed directly from disintegration and decomposition of rocks—consists of a series of virgin soils collected by Prof. E. L. Berthoud, of Cañon City, Colorado, each of which was taken from a large area of known rocks with no opportunity of admixture with *débris* from breaking down of rocks of a different character, and they give a fair representation of the soils which these rocks are capable of producing, and their consequent agricultural value. Alongside of the specimens of soils are fragments of the rocks from which they are formed.

The marls are rather limited in number, and consist of the varieties named above. The greensand marl formations are found most extensively in New Jersey, but are by no means confined to that State alone. They may also be found in the recent geological formations of very many of the States of the Atlantic coast south of New Jersey. Their value, as is well known, depends upon the potash and phosphate of lime they are able to furnish to the soil.

The marls, which are the more numerous of the recent geological formations, but which are by no means as valuable as the greensand marls, are the calcareous or shell marls, whose value depends almost entirely upon the carbonate of lime in a friable condition they contain, and of which they are wholly or in part composed.

The third class, which is far more limited with regard to its geographical distribution, embraces the phosphatic marls found in vicinity of the phosphatic rock deposits near Charleston, S. C. They are taken from different depths below the surface, ranging from 3 to 56 feet, and contain a fair percentage of phosphate of lime. Their value depends upon the percentage of this important constituent, (which varies with the depth from which they are taken,) and upon their mechanical condition, which is favorable to their removal and application to the soil. They are by no means as valuable, but are closely allied to the phosphatic rocks spoken of above, which constitute the next group. These rocks are represented by a series of specimens collected under the supervision of Prof. C. U. Shepard, of Charleston, and embrace the two varieties known as *river rock* and *land rock*, terms depending upon the immediate locality from which they are taken. There is little difference in the chemical composition of these two varieties, but there is a marked difference in the color of the rocks, as well as of the fossils accompanying them. The color of the river rock is very dark, while that of the land rock is quite light, and in the collection these two varieties, with the fossils found in connection with them, are so arranged as to illustrate clearly these differences.

The vegetable and animal fertilizers which constitute the next group, while they are not as extensive in point of quantity as those already named, are of no less relative value. They consist of muck, peat, marsh-weeds, sea-weeds, cancerine, and fish scrap; pork cracklin, dried blood, and other refuse matters from the abbatoirs; and finally, of the excrement of bats, large deposits of which are found quite widely distributed in caves of many of the inland Southern States, and which bids fair to be a fruitful source of fertilizing for the plantations of the South. A complete description of some of these deposits, with the results of analyses of samples taken from them, will be found in another part of this report.

The artificial fertilizers are made up by the combination, according to formulæ adopted by the several manufacturers, of the natural fertilizers enumerated. Many of those found in American markets, and indeed most of them, are improved by addition of materials obtained as by-products of manufacturing processes, or imported from other countries. The method generally employed in this branch of manufacture

is illustrated by a series of products taken from the different stages of the process as carried on by the Pacific Guano Company of Boston and Charleston. The series consists of specimens of raw rock, the crushed and ground rock, sulphur, niter, and sulphuric acid, the rock treated with acid, sulphate of ammonia, fish-scrap, Stassfurth potash salts, and the mixture of the last four in the finished products.

This series is followed by another, consisting of samples of the products put upon the markets by different manufacturers.

We now come to the second grand division of our collection, which is subdivided into different groups as follows:

1. Cereals and the products resulting from their utilization.
2. Materials illustrating the production of sugar.
3. Products illustrating the processes of fermentation and distillation of amylaceous and saccharine substances.
4. Products illustrating the preparation of tobacco for consumption.
5. Tanning and dyeing materials.
6. Materials resulting from the dry distillation of vegetable products.
7. Production of vegetable oils.
8. Preservation of fruits and vegetables, and vegetable products prepared for food.
9. Products of the American Materia Medica, and the active proximate principles separated from them.

The utilization of cereals consists in the manufacture of flour, meal, and starch.

The manufacture of flour consists of the production of meal from the grain by grinding, the separation of the flour (the amylaceous and glutinous constituents) from the bran (cellulose) by sifting, and the further purification of the flour by special methods. These processes are illustrated by means of specimens of materials obtained in the production of flour and meal from wheat, rye, corn, and buckwheat. The preparation of the cereals for food by other methods is illustrated by specimens of the finished products obtained by means of them. Among these products may be enumerated hulled corn or samp, hominy, wheaten grits, steam-cooked and desiccated grains, including wheat, barley, and oats, either in the whole grain, or the crushed grain and meal. The further utilization of grain in the manufacture of starch consists of the separation of the amylaceous constituent from the glutinous, and this is effected in two ways, by fermentation and by washing with dilute alkaline solutions. The first method is the one more generally employed for manufacture of starch for laundry purposes, sizing, and conversion into gums and starch substitutes. The second method, while it is also employed for manufacture of laundry starch, is particularly employed in the purification of starch for the purposes of food.

The fermentation method is represented by a series of samples taken from different stages of the process as carried on by O. A. Taft, jr., & Co., of Providence, R. I.; *i. e.*, meal, meal in process of fermentation, washed starch, dried and fully crystallized starch, and ground starch. Following these specimens are others representing manufacture of gums and starch substitutes from starch by various methods.

The washing process is represented by samples of finished products furnished by Kingsford & Co., of Oswego, N. Y., and by Duryea & Co., of New York City; but specimens from the intermediate stages are not shown, from the fact that the details of the method employed are not made public. The collection also contains samples of starch manufactured from potatoes.

The second group of this grand division contains samples of material designed to illustrate the manufacture of sugar. The sources from which this important product is obtained are the sugar-cane, the beet-root, and the sap of the sugar-maple.

The process of manufacture of sugar from the cane, as carried on in this country, consists of four stages, viz: separation of the juice; concentration of the juice; separation of raw sugar by crystallization and filtration; purification of the raw sugar. The samples exhibited in this group consist, therefore, of materials taken from the different stages here named, and placed alongside the product from each stage of the process of manufacture is a model of the machinery employed.

The beet-sugar industry is represented by manufactured products alone, on account of the difficulty experienced in securing samples of the products resulting from the process employed.

The production of maple-sugar is represented by samples of raw and purified sugar, and by photographs of maple forest and concentrating-house, showing the methods of collecting and concentrating the sap.

The third group represents the processes of fermentation and distillation for production of alcoholic liquors, and embraces two subdivisions, viz:

1. Alcoholic liquors produced by fermentation of amylaceous substances. (grains.)
2. Alcoholic liquors produced by fermentation of saccharine substances, (fruits.)

These subdivisions may be still further divided into—

1. Products resulting from simple fermentation; and,
2. Products resulting from distillation of fermented materials.

Under the head of simple fermentation of amylaceous substances we have the pro-

duction of beer, ale, and porter, which is appropriately illustrated by means of samples taken from different stages in the process of manufacture.

By distillation of fermented amylaceous substances we have the production of whisky. This important branch of industry is represented by samples of grain generally employed in the manufacture, both in the raw state and as prepared for fermentation; samples of the yeasts and mashes necessary to the production of different varieties of whisky, and the fermented mashes or beer. Following these are the plans of an American distillery and a model still, succeeded by the distillates in different stages of concentration and rectification.

By fermentation of saccharine substances we have the production of wines; and from distillation of the fermented products, brandy results. This branch of manufacture is represented by samples of American wines and brandies.

The fourth group contains specimens intended to show the chemical changes involved in the preparation of tobacco for consumption. These changes in the character of the leaf for chewing and for snuff, consist in sweetening and fermenting, and the products necessary to the illustration of these changes are therefore shown.

Group 5 is one of great interest and importance in this country, and contains specimens of the materials used for tanning and dyeing. The tanning materials consist of samples of barks, herbs, and leaves. Among the herbs and leaves are those lately discovered to be of value in this particular, viz, the *Ephedra antisyphillitica* and the *Polygonum amphibium*. The manufacture of tanning extracts from hemlock and oak barks, both for home consumption and for exportation, is represented by the barks, the raw and the concentrated extract. The American dyes are represented by samples illustrating the manufacture of flavine from oak bark, indigo produced from native plants, and by barberry root, orchilla weed, cudbear, &c.

In the next group follows a series containing the products resulting from the dry distillation of vegetable products. This group may be divided into two parts, viz, distillation of wood for production of crude acetic (pyroligneous) acid and acetates; and distillation of pine-tree products for production of turpentine and rosin. The crude acetates are used largely for mordants in the process of dyeing, and they are therefore accompanied by specimens showing their application in calico-printing. They are further used for the production of pure acetic acid.

The pine-tree products consist of different grades of virgin dip, turpentine, rosin, tar, and pitch, arranged in the order of their production.

The production of vegetable oils involves two processes—that of expression and that of fractional distillation—necessary to the separation of fixed oils from seeds, and of the essential or volatile oils from herbs and leaves. Of the fixed oils manufactured on a large scale, and the production of which constitutes important branches of industry in this country, we have three, viz, cotton-seed oil, linseed oil, and castor oil, and these oils, with the waste material pertaining to their production, constitute Group 8 of the second grand division.

The method for the production of oil from cotton-seed consists, essentially, of three parts, viz, removing the hull, crushing the seed, and removal of the oil by pressure. The production of oils from other seeds requires only the last two processes, the first being unnecessary. The specimens in this group, therefore, necessarily consist of raw seeds, decorticated or hulled seed, hulls, crushed seed or meals, raw oil-cake or residue from the press, and refined oil. The cotton-seed series is accompanied by specimens of the varieties of soap manufactured from the oil. Of the essential or volatile oils, we have eighteen varieties manufactured from indigenous products, and samples of each of these oils are found in this group.

Group 8 is intended to illustrate the methods employed for the preservation of fruits and vegetables. Those most extensively in use in this country are hermetically sealing, packing in sugar or sirup, and desiccation, and the specimens, consequently, consist of fruits preserved by these methods. This group also contains a series of vegetable products prepared for food by special methods, contributed by E. C. Hazard & Co., New York City.

Group 9 contains a series of American drugs, consisting of specimens of herbs, roots, and leaves, having medicinal properties, and are accompanied by their active proximate principles, (alkaloids, resins, or oils, as the case may be,) which have been separated. This group was prepared under the direction of Prof. E. S. Wayne, of Cincinnati, and contains some principles never separated before.

The collection illustrating the manufacture of butter and cheese is well described in the following terms by Prof. G. C. Caldwell, of Cornell University, Ithaca, N. Y., who has had charge of the preparation and analysis of the samples:

"The collection for the illustration of the manufacture of the products of the dairy, prepared and analyzed at the laboratory of agricultural chemistry in Cornell University at the request of the Department of Agriculture, and placed in its exhibit at the Centennial, consists of samples obtained directly from dealers in dairy supplies, or from factories or private manufacturers of butter or cheese.

"It begins naturally with salt, rennet, and annotto—the first being universally used

in the manufacture of both butter and cheese, the second always in the manufacture of cheese, and the last-mentioned substance being very commonly used in coloring both butter and cheese.

"In regard to the samples of salt, four of which are of English manufacture and one of American, the chemical analysis serves the useful purpose of showing that the difference between them is very slight, and in practice would appear to amount to nothing at all; and it also shows that the best American is fully equal to the best English product.

	Pure salt calc. from the chlorine.	Lime.	Sulphuric acid
Syracuse salt	97.74	0.4	0.62
Ashton's Liverpool salt	97.71	0.59	0.9
Worthington's Liverpool salt	97.65	0.55	0.74
Marshall's Liverpool salt	97.99	0.47	0.72
Dean Bros.' Liverpool salt	97.77	0.52	0.91

"Of the annotto, the seed itself from which the coloring matter is obtained, is shown: this is used by some dairymen directly for the preparation of their coloring matter: then comes the so-called basket annotto, the usual form in which the coloring matter, extracted from the seeds by water, comes to market; there are exhibited also two preparations of annatto made in this country, the annottoine and the golden extract of annotto, both of which are quite free from any injurious ingredient; their use is preferred by many to that of the crude article. As there is no satisfactory method of determining the proportion of coloring matter in this substance, the results of the chemical analysis of its various forms, in use among dairymen, have little practical value; they do show, however, a very great difference between the three grades of basket annotto, for that which is richest in organic matter is probably richest in coloring matter.

	Water.	Ash.	Organic matter.
Basket annotto No. 1	32.64	10.78	56.58
Basket annotto No. 2	22.96	28.83	48.21
Basket annotto No. 3	44.18	8.34	47.48
Annottoine	9.13	4.66	86.21

"Of rennet two samples are shown, the domestic and the foreign. There being no known means of estimating with any accuracy the proportion of the coagulating principle of the rennet, no analysis was made of these samples.

"While in Europe there is a great number of methods of making cheese, with as great variety in the character of the products, our American dairymen confine themselves to a very few methods; in fact three different types will represent the main bulk of the manufacture at the cheese-factories of this country.

"Concerning the most common mode of manufacture, that which yields the so-called whole-milk cheese, made from the whole of the milk without any skimming, the main details of the process are familiar to all who are interested in the subject. Therefore we simply give below the results of the chemical analysis of several samples obtained from different parts of the country, and represented in the collection:

	Water.	Ash.	Fat.	Caseine, albumen, &c.
New York factory cheese, No. 1	31.41	3.53	37.88	27.18
New York factory cheese, No. 2	35.68	3.60	35.15	25.57
New York factory cheese, No. 3	35.24	3.23	35.68	25.85
New York factory cheese, No. 4	33.73	4.05	35.57	26.65
Massachusetts factory cheese, No. 1	34.18	3.02	34.92	27.88
Massachusetts factory cheese, No. 2	38.5	3.73	31.19	26.58
Maine factory cheese, Jersey milk	28.11	2.71	41.03	28.15
Wisconsin factory cheese	35.49	3.34	34.05	26.12

"Of the second method of manufacture, that by which the ordinary skim-cheese is produced, the usual proportion of cream being taken from the milk for the manufacture of butter, two varieties are presented. By the one method, and that which is in most common practice, the skimmed milk alone is used for manufacture into cheese; by the other method, which has been but recently introduced, the buttermilk is added to the skim-milk; the fresh milk is heated to 130° Fahr., cooled to 65°, allowed to stand from twenty-four to forty-eight hours for the cream to rise, and the cream is churned sweet. The results of the analysis of the two kinds of cheese are given below:

	Water.	Ash.	Fat.	Case-ine, &c.
Common skim cheese	42.38	3.63	20.55	33.44
Scalded milk and buttermilk cheese	44.48	4.50	15.22	45.80

"While these analyses indicate a larger proportion of fat in the ordinary skim-cheese, there was nevertheless a marked difference in quality in favor of the other; the latter was softer and more salvy, and probably more digestible. It may be said, further, that the proportion of fat in skim-cheeses is not so constant as in whole-milk cheese. Another sample of scalded skim-milk and buttermilk-cheese analyzed in this laboratory was found to contain 20 per cent. of fat.

"The third important method of cheese-making has also been but recently introduced, and the practice of it is as yet confined to a few factories. As in the manufacture of skim-cheese, the butter-fat is mostly removed from the milk by skimming; but, while the milk is coagulating after the addition of the rennet, as much of a clean animal fat, manufactured from the beef's caul, is most intimately mixed with the forming curd as it will take up; the excess of oil floats on the surface after the coagulation is completed, and is skimmed off; a cheese is thus obtained which, as the analysis below shows, is sometimes richer in fat than the ordinary skim-cheese:

	Water.	Ash.	Fat.	Case-ine, &c.
Oleomargarine cheese	40.56	3.98	20.43	36.97

"For some unexplained reason the curd will not always take up the same amount of fat, so that its proportion in the cheese is variable; in the case of other analyses o the same kind of cheese made in this laboratory the proportion of fat has ranged from 18 to 25.9 per cent.

"This fat that is added to the curd is sometimes called oleomargarine, and the cheese is hence conveniently distinguished from other kinds by the name given to it above; in respect to quality it is much superior to the ordinary skim-cheese, although, as in the case of the comparison between the two varieties of skim-cheese already mentioned, the better cheese is not always found to contain the larger proportion of fat.

"We have found but one veritable imitation of the styles of cheese so common on the continent of Europe. Limburger cheese is made in one place in the State of New York somewhat in the same manner as it is made in Europe. The analysis shows that it contains a large proportion of water—43.67 per cent.—and somewhat less than the usual proportion of fat that is found in whole-milk cheese, or about 30 per cent.

"The collection further embraces all the several materials used and by-products formed in the three most important methods of cheese-making; the fresh milk, curd, whey, and ripe cheese in the whole-milk cheese manufacture. In addition to these, the skim-milk, cream, and buttermilk in the case of the skim-cheese manufacture. The analysis of these substances being not fully completed at this time of writing, they will be communicated in the next monthly report.

"In the manufacture of whole-milk cheese a considerable portion of the fat remains in the whey. In a few cases this fat is collected and made into whey-butter, that brings a fair price in the market; and the removal of this fat does not, it is asserted, lessen the feeding-value of the whey. A sample and an analysis of this butter are presented; but if a chemical analysis is no true test of the quality of a sample of cheese, still less is it so in the case of butter. Two samples of factory-butter and one of butter made from the milk of Jersey cows are also contained in the collection, of which the last mentioned was by far superior to the others in quality; but no such difference is indicated in the results of the analysis given below:

	Water.	Ash.	Fat.	Caseine &c.
Jersey butter	11.29	3.20	84.76	0.75
Factory butter	12.36	2.98	83.41	1.25
Do	8.82	3.43	87.75	
Whey butter	9.77	1.67	88.56	

"A sample of Borden's condensed milk illustrates that important branch of dairy economy. The analysis reveals the large proportion of cane-sugar that is added to the milk, in order to get a product that will keep well.

"*Composition of Borden's condensed milk.*

Water	23.6
Ash	1.57
Fat	11.19
Caseine, (by difference)	14.71
Milk-sugar	12.43
Cane-sugar	36.29

"Finally, we have to mention, as a by-product of some use, whey-oil, which is prepared from the whey, and is used for oiling the cheese in the curing-room. It melts at a lower temperature than butter made from the same material, and is destitute of the texture and flavor of good butter."

STATISTICAL DIVISION.

The exhibits of the statistican, J. R. Dodge, are designed to present in compact form and logical arrangement, with such aids to interpretation as are afforded by color and mathematical delineation, some of the main facts which illustrate the progress of settlement, production, and rural improvement in the United States. With a national census giving only the estimated production of the principal crops once in ten years, and very few of the States making any attempt in the direction of agricultural statistics, the field of prompt and general agricultural inquiry is left almost entirely to the statistical division of the Department of Agriculture. The rapid extension of cultivation in Western States and Territories and in the Pacific and Southwestern States, which causes changes in a single year that appear almost incredible, as for instance the increase of corn production in Kansas from 16,000,000 of bushels in 1874 to 80,000,000 in 1875, renders the work of this division exceedingly active and difficult. To gather the immense array of fragmentary data, and present for the Centennial a rounded and complete result in as many essential points as possible, much special statistical work was necessary, which has been reduced to a minimum by the extremely limited appropriation available for the service. The line of effort adopted includes, first, statistical record, in album form, of the several great classes of agricultural facts, in plain text and with map, diagram, and pictorial illustrations, designed to present briefly more succinct summary than has ever been presented to the public, and more complete in the classes of facts selected for exposition; second, a series of large outline maps illustrating the geographical distribution of crops and various results of original investigation; third, a series of charts and diagrams, showing important facts in production and distribution, industrial education, and political economy. The maps and charts were mostly finished before the opening of the Exposition. The magnitude of the labor required more time for finishing some of the larger charts. The general record, in its details, is among the exhibits so far as completed.

MAPS.—The larger charts consist of sixteen sheets, mounted as a single outline map of the United States, in size 17 by 12 feet, six in number, as follows:

1. Showing in five classes, by degrees of tinting, the value of the farm-lands of the United States by groups of counties, the first class including all below $10 per acre; the second, those not less than $10, and not exceeding $20; the third, those not less than $20, and not exceeding $30; the fourth, $30, and not exceeding $40; the fifth, $40 and over.

2. Showing, by five degrees of color, the average monthly wages through the year of farm-labor (without board) in the several States, from records of an investigation made by the statistical division in 1875. The classes are as follows: Under $20: South Carolina, $12.84; North Carolina, $13.46; Alabama, $13.60; Georgia, $14.40; Virginia, $14.84; Tennessee, $15.20; Florida, $15.50; Mississippi, $16.40; Kentucky, $18.12; Louisiana, $18.40; Missouri, $19.40; Texas, 19.50. Under $25: Maryland, $20.02; Delaware, $20.33; Arkansas, $20.50; West Virginia, $20.75; New Mexico, $22.75; Kansas, $23.20; Nebraska, $24; Ohio, $24.05; Indiana, $24.20; Iowa, $24.35. Under 30: Illinois, $25.20; Maine, $25.40; Wisconsin, $25.50; Pennsylvania, $25.89; Minnesota, $26.16; New York, $27.14; Michigan, $28.22; Connecticut, $28.25; New Hampshire, $28.57; Vermont, $29.67. Under $35: Rhode Island, $30; New Jersey, $30.71; Massachusetts, $31.87; Dakota, $32.50. $35 and over: Washington, $35; Utah, $35.50; Oregon, $38.25; Colorado, $38.50; California, $44.50; Montana, $45; Wyoming, $47.50.

3. Showing by groups of counties, in five shades of color, the proportion of woodlands in the farm-areas reported in the last census. The first class includes all counties with less than 15 per cent. in forest, the other classes divided, respectively, by 30, 45, and 60 per cent.

4. Showing the distribution of the product of the sugar-crops—cane, sorghum, maple, and beet—and indicating, by three shades of color, the relative amount of such production in groups of counties.

5. Showing the distribution of the production of the textile fibers—cotton, hemp, flax, and wool—and indicating the localities of greatest production by three shades of color in each. Counties producing less than 1,000 bales of cotton, 50 tons of hemp, 100,000 pounds of flax fiber, or 100,000 pounds of wool are not indicated.

6. Showing the area in fruits of all kinds, by tints of States in four degrees of density, and indicating the prominent fruit sections and kinds of fruits most grown in each. The first class includes all States in which the entire fruit-area does not exceed 1 per centum of the improved land in farms; *i. e.*, all farm-lands exclusive of forest and waste areas, viz: Minnesota, Iowa, Nebraska, and the Territories; the second, Maine, New Hampshire, Vermont, Virginia, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Louisiana, Wisconsin; third, New York, Pennsylvania, Texas, Arkansas, Tennessee, West Virginia, Kentucky, Ohio, Indiana, Illinois, Kansas, California, Oregon; fourth, Massachusetts, Rhode Island, Connecticut, New Jersey, Delaware, Maryland, Florida, Michigan, Missouri.

CHARTS.—The larger charts are as follows:

1. Showing the corn and wheat production of the country, with the exports, seed used, and home consumption for five years, constituting the first half of the present decade. It is 7 feet 6 inches in height and 4 feet 6 inches wide, with diagrams presenting these details of average production on a scale of three-fourths of a million bushels to the square inch. It is a lucid and striking showing, especially to foreigners unfa-

SHELS.
EAT.

miliar with the immensity of our cereal productions and the comparatively small proportion of the whole sent abroad.

The accompanying diagram represents it on a reduced scale. This chart makes the average supply of corn, in excess of export, for each unit of population, almost exactly 24 bushels for this period; the average area in cultivation, 37,699,803 acres; and the yield per acre 26.3 bushels. The statement accompanying the chart represents corn production and distribution as follows:

Years.	Production.	Consumption.	Seed.	Export.	
				Corn as meal.	Corn.
	Bushels.	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*
1870	1,094,255,000	1,070,695,802	12,882,325	850,564	9,826,309
1871	991,898,000	944,807,275	11,363,712	1,235,309	34,491,650
1872	1,092,719,000	1,040,722,348	11,842,278	1,612,444	38,541,930
1873	932,274,000	883,222,450	13,065,716	1,551,228	34,434,606
1874	850,148,500	806,444,492	13,678,972	1,166,016	28,858,420
Total	4,961,294,500	4,745,892,370	62,833,003	6,416,212	146,152,915
Average	992,258,900	949,178,474	12,566,601	1,283,242	29,230,583

An importation of corn is a fact scarcely dreamed. A little crosses our northern boundary from the Dominion, averaging 68,864 bushels.

The average supply of wheat in excess of export is 5 bushels; area in cultivation (average for five years) 21,386,709; yield per acre, 12.2 bushels. The imports of wheat have averaged 1,502,541 bushels, of which about three-tenths have been exported. The wheat figures are as follows:

Years.	Production.	Consumption.	Seed.	Export.	
				Wheat.	Wheat as flour.
	Bushels.	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*
1870	235,884,700	154,821,703	28,488,888	34,304,906	18,269,203
1871	230,722,400	161,810,806	29,915,889	26,423,089	12,572,675
1872	249,997,100	166,094,847	31,247,538	39,294,285	12,810,430
1873	280,372,700	155,735,041	33,127,261	71,089,028	20,420,470
1874	308,102,700	197,849,555	37,450,540	53,047,173	19,755,430
Total	1,305,079,600	836,911,952	160,270,061	224,019,374	83,878,210
Average	261,015,920	167,382,390	32,054,013	44,803,875	16,775,642

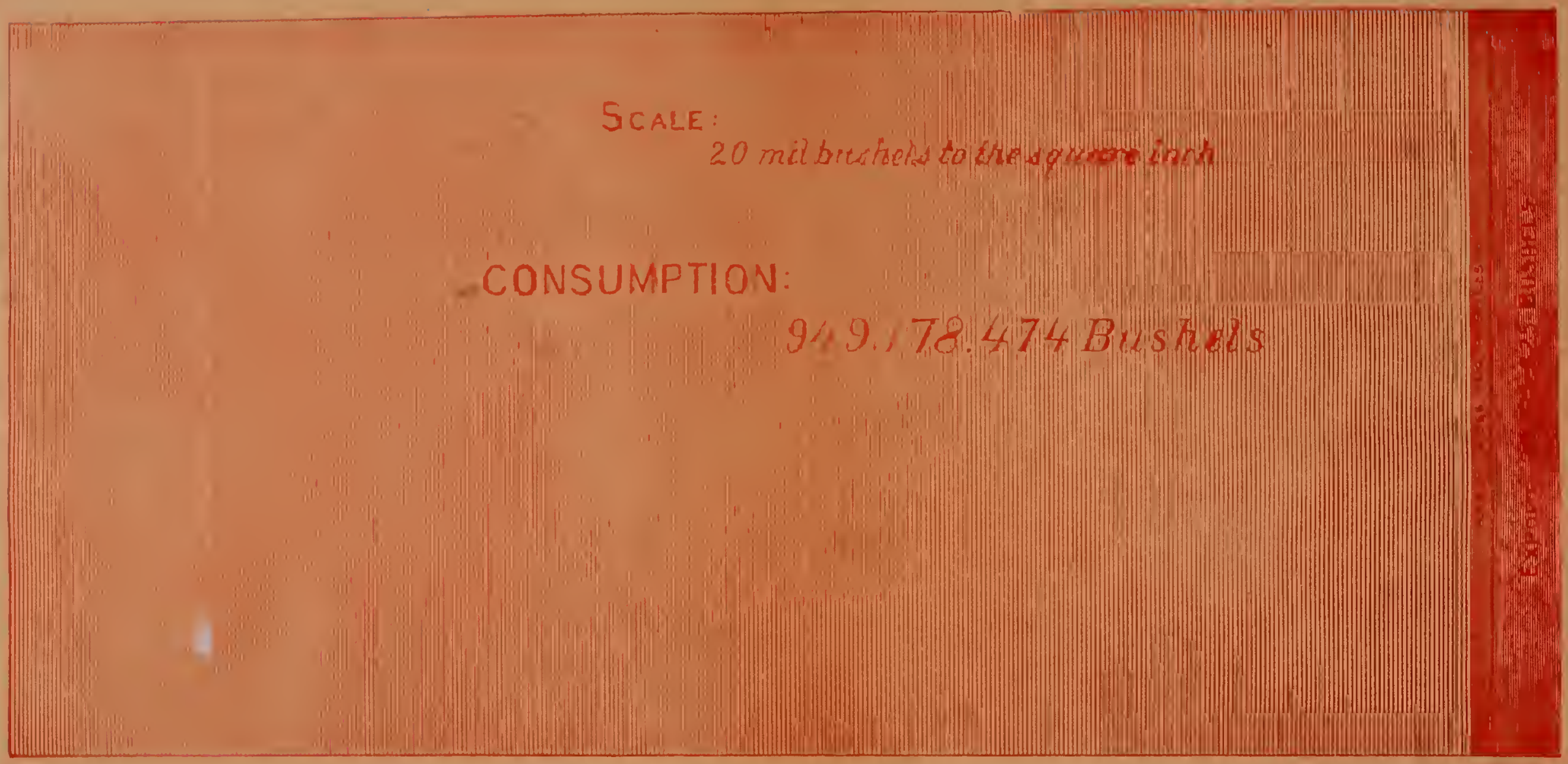
2. Showing the proportion of improved lands to the farm-area of each State and Territory. This is given in classes as follows:

Under 30 per cent.: North Carolina, South Carolina, Georgia, Louisiana, Texas, Arkansas, Dakota, Colorado, New Mexico, Washington, Wyoming; 30 and under 40 per cent.: Florida, Alabama, Minnesota, Mississippi, Tennessee, West Virginia, Kansas, Nebraska, Idaho: 40 and under 50 per cent.: Maine, Virginia, Kentucky, Missouri, California, Oregon, Nevada; 50 and under 60 per cent.: Rhode Island, Indiana, Michigan, Wisconsin; over 60 per cent.: New Hampshire, Vermont, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Ohio, Illinois, Iowa, Utah, Arizona, Montana.

This chart also indicates the extent of several crop-belts, by a delineation of the line of northern limit respectively of sea-island cotton, upland cotton, sorghum, and winter wheat. The line dividing spring wheat from winter is worthy of careful study, as it separates, tortuous as it appears, within one or two parts in a hundred, the entire production of

CORN AND WHEAT PRODUCTION.

CORN.—Average, 1870–1874. 992,258,900 bushels.



WHEAT.—Average, 1870–1874, 261,015,920 bushels

fall and spring sown grain. The line runs from near Boston through Southeastern Massachusetts and Connecticut, curves round the Housatonic Hills, strikes the vicinity of Saratoga, and runs in a northwesterly direction to Lake Ontario; thence including all our territory east of Lake Michigan, traverses a small section of Southwestern Indiana, strikes nearly west through the northern line of Missouri, crosses the Missouri at Saint Joseph, and gradually curves southward in Kansas as higher elevation is reached. The general direction from ocean to lakes is northwest, from lakes to the Rocky Mountains west-southwest. The line of northern limit of sorghum, on the contrary, preserves with a degree of uniformity a northwestern course. The difference is, sorghum is a summer crop, and its cultivation follows the summer isothermal line; while winter-wheat depends not only on winter and spring climates, but to some extent on the nature of the soil and methods of cultivation.

The sea-island-cotton line skirts the coast from Charleston to Galveston; and the upland line runs from Norfolk southwesterly, curving around the mountain-spurs of upper Georgia, cutting the northeastern section of Alabama, and thence sharply northward to include the Tennessee Valley and Western Tennessee, and all but the hill region of Arkansas, and southwestwardly through a corner of the Indian Territory and Texas to the Rio Grande.

Accompanying this chart is an estimate of the extent of cultivation of the principal crops, as follows:

		Acres.
Area, in 1875, in cereal-crops		87,000,000
Of which, in maize	44,800,000	
Of which, in wheat	26,400,000	
Area, in 1875, in hay-crops		23,500,000
Area, in 1875, in cotton		10,750,000
Area, in 1875, in orchards, vines, and fruits		4,500,000
Area, in 1875, in tobacco		460,000
Total area in cultivation in 1875		133,000,000

The following statement of grand areas, in square miles, is also given:

	Square miles.
Area, including water-surface	4,000,000
Area of States and Territories	3,611,889
Area of the thirteen original States	341,756
Area of public-land States and Territories	2,867,185
Area of public land unsold in 1870	2,168,331
Area of farm-lands in 1869	637,086
Area of farm-lands improved	295,189
Area of farm-lands in forest	248,922

3. Showing the peculiarities of the agriculture of the Pacific coast region, and the local distribution and prominence of its principal crops.

DIAGRAMS.—To aid in comparison of different numbers and quantities, a tangible measure is useful to all, and to the multitude absolutely necessary. The arts of coloring and mathematical drawing are both brought into requisition for illustration of these abstract ideas which represent things so practical and commonplace. Among the diagrams which form a part of the exhibit are the following:

1. *The product of corn per capita.*—This is based upon the census year, 1869, to save the necessity of estimating anew both population as well as production, taking the census data for both. The figures on which the diagram is based are, for the several States:

5
10
15
20
25
30
35
40
45
50

PRODUCT OF CORN PER CAPITA.

Crop of 1869.

States.	Population.	Corn.	States.	Population.	Corn.
		Bushels.			*Bushels.*
Alabama	996,992	16,977,948	Nebraska	122,993	1,736,710
Arkansas	484,471	13,382,145	Nevada	42,491	9,640
California	560,247	1,221,222	New Hampshire	318,300	1,277,760
Connecticut	537,454	1,570,364	New Jersey	906,096	8,745,384
Delaware	125,015	3,010,390	New York	4,382,759	18,462,825
Florida	187,748	2,225,056	North Carolina	1,071,361	18,454,215
Georgia	1,184,109	17,646,459	Ohio	2,665,260	67,501,144
Illinois	2,539,891	129,921,395	Oregon	90,923	72,139
Indiana	1,680,637	51,094,538	Pennsylvania	3,521,951	34,702,066
Iowa	1,194,020	68,935,065	Rhode Island	217,353	311,937
Kansas	364,399	17,025,525	South Carolina	705,606	7,614,207
Kentucky	1,321,011	50,091,006	Tennessee	1,258,520	41,343,614
Louisiana	726,915	7,506,622	Texas	818,579	20,554,532
Maine	626,915	1,089,888	Vermont	330,551	1,690,882
Maryland	780,894	11,701,817	Virginia	1,225,163	17,649,304
Massachusetts	1,457,351	1,397,807	West Virginia	442,014	8,197,865
Michigan	1,184,059	14,086,238	Wisconsin	1,054,670	15,033,998
Minnesota	439,706	4,743,117			
Mississippi	827,922	15,637,316	Total	38,115,641	759,825,274
Missouri	1,721,295	65,034,075			

It will be remembered that this was a year of very deficient yield of corn. Illinois, which stands second in proportion to population, had less than two-thirds of a full crop. A diagram for 1875 would differ somewhat from this. Illinois and most of the States west of the Mississippi would nearly or quite double the present rate per head, and require several additional "stories" in the structure of the diagram.

2. *The product of wheat per capita*, from the crop of 1869, which was a large one for that date, but not so large as the crop of 1874 and of 1875, the acreage being on the increase. It will be seen that none of the New England States, with the sole exception of Vermont, produces one bushel per head; that New York and New Jersey grow about half of their wheat supply; and the Southern States, with the exception of Virginia, fail to produce five bushels for each inhabitant, though in ordinary years Tennessee and Kentucky have a surplus. The following table gives the crop of each State and the number of bushels to each inhabitant:

States.	Wheat.	No. of bushels to each inhabitant.	States.	Wheat.	No. of bushels to each inhabitant.
	Bushels.			*Bushels.*	
Alabama	1,055,068	1.05	Missouri	14,315,926	8.31
Arkansas	741,736	1.53	Nebraska	2,125,086	17.29
California	16,676,702	29.76	Nevada	238,866	5.39
Connecticut	38,144	.07	New Hampshire	193,621	.60
Delaware	895,477	7.16	New Jersey	2,301,433	2.54
Florida			New York	12,178,472	2.77
Georgia	2,127,017	1.79	North Carolina	2,859,879	2.66
Illinois	30,128,405	11.86	Ohio	27,882,130	10.46
Indiana	27,747,222	16.51	Oregon	2,340,746	25.75
Iowa	29,435,632	24.65	Pennsylvania	19,672,877	5.58
Kansas	2,391,198	6.56	Rhode Island	784	.00.3
Kentucky	5,728,704	4.33	South Carolina	783,610	1.11
Louisiana	9,906	.01.3	Tennessee	6,188,916	4.91
Maine	278,793	.44	Texas	415,112	.50
Maryland	5,774,503	7.39	Vermont	454,704	1.37
Massachusetts	34,648	.02.3	Virginia	7,108,787	5.03
Michigan	16,265,773	13.73	West Virginia	2,483,243	5.61
Minnesota	18,866,073	42.90	Wisconsin	25,606,341	24.28
Mississippi	274,479	.33			

3. *Area of wheat*, with the proportion sowed and drilled, respectively. This diagram is based on results of investigation by the statistical

PRODUCT OF WHEAT PER CAPITA.

Crop of 1869.

division. It omits the New England States, which produce little wheat, nearly all of which is sown broadcast. The wheat-area in New York is divided equally between the two methods.

In New Jersey, Pennsylvania, Delaware, and Maryland the drill greatly predominates. In the Southern States the area is small, particularly in the cotton States, and the drill is comparatively unknown. North of the Ohio River, in the winter-wheat States, the drill is very generally used, the proportion rising to 76 per cent. in Illinois.

In the spring-wheat region there are several reasons for prominence of broadcasting. One comes from a prevalent practice of sowing wheat on the irregular surface of a corn-field without plowing; another is found in the use of the combined cultivator and broadcast-seeder, which destroys many of the weeds that would otherwise be left between the drills. The gist of both of these reasons lies in the saving of labor by a compromise process, which is cheap though slovenly. The result of the investigation shows that 47 per cent. of the winter-wheat, and 30 of the spring, or 37 of both, represent the proportion seeded by the drill. The improvement by drilling is made to average 10 per cent. The average quantity of seed used for seeding winter-wheat is 1.35 bushels per acre; 1.24 for drilled, 1.44 for the sown. The details are as follows:

States.	Proportion sown.	Proportion drilled.	Increase of product by drilling.	Seed per acre.	
	Percentage.			Bushels in broadcasting.	Bushels in drilling.
New York	50	50	13	1.80	1.60
New Jersey	45	55	6	1.95	1.60
Pennsylvania	30	70	12	1.74	1.49
Delaware	26	74	10	1.75	1.50
Maryland	24	76	7	1.70	1.43
Virginia	62	38	12	1.44	1.21
North Carolina	97	3	.....	1.07	.83
South Carolina	99	1	.....	1.00	.70
Georgia	99	1	.....	1.00	.90
Alabama	99	1	.....	1.00	.....
Mississippi	99	1	.....	1.25	.....
Texas	98	2	.....	1.18	.90
Arkansas	100	.....	.....	1.10	.....
Tennessee	96	4	10	1.20	1.10
West Virginia	58	42	12	1.53	1.33
Kentucky	92	8	10	1.36	1.11
Ohio	39	61	16	1.57	1.33
Michigan	49	51	9	1.62	1.40
Illinois	24	76	19	1.52	1.24
Indiana	49	51	15	1.48	1.21
Missouri	62	38	21	1.52	1.21
Kansas	55	45	16	1.49	1.23
Nebraska	51	49	17	1.56	1.25
California	98	2	.....	1.33	.....
Oregon	81	19	5	1.50	1.21

4. *Corn and wheat exports of fifty years*, 1825 *to* 1875.—The light space on the right of the diagram represents the volume of wheat, the darker shade the flour in its equivalent of bushels of wheat. On the left corn in bushels is shown, and the darker stripe gives the equivalent of the corn-meal exports. It will be seen that the first half of the period is credited with less than a fifth of the wheat-exports; and that the aggregate of the last quarter of the period is equal to the total shipment of the preceding three-fourths. A striking feature of the diagram is the remarkable increase in the export of whole wheat. For many years

WEST
SOUTH

AREA OF WHEAT.

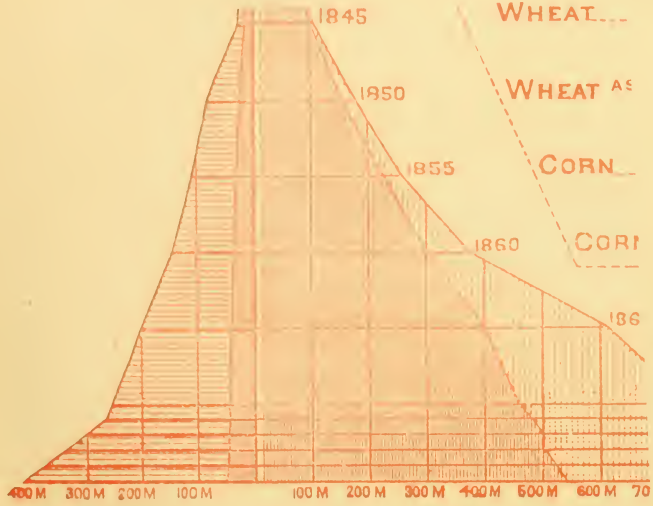
PROPORTION SOWN AND DRILLED RESPECTIVELY.

scarcely an appreciable quantity, it increases slowly at first, rapidly after 1860, and at the close of 1875 it nearly equaled the aggregate of wheat-exports in the form of flour.

Year.	Wheat.		Flour.		Total wheat and flour.	
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1830	125, 547		23, 259, 700		23, 385, 247	
1835	614, 145		26, 209, 820		26, 823, 965	
		739, 692		49, 469, 520		50, 209, 212
	739, 692		49, 469, 520		50, 209, 212	
1840	1, 842, 841		20, 464, 660		22, 307, 501	
		2, 582, 533		69, 934, 180		72, 516, 713
	2, 582, 533		69, 934, 180		72, 516, 713	
1845	2, 946, 861		31, 373, 485		34, 320, 346	
		5, 529, 394		102, 307, 665		106, 837, 059
	5, 529, 394		101, 307, 665		106, 837, 059	
1850	10, 184, 645		61, 421, 140		71, 605, 785	
		15, 714, 039		162, 731, 805		178, 445, 844
	15, 714, 039		162, 731, 805		178, 445, 844	
1855	16, 446, 955		65, 747, 590		82, 194, 545	
		32, 160, 994		228, 479, 395		260, 640, 389
	32, 160, 994		228, 479, 395		260, 640, 389	
1860	38, 808, 573		78, 891, 340		117, 699, 913	
		70, 969, 567		307, 370, 735		378, 340, 302
	70, 969, 567		307, 370, 735		378, 340, 302	
1865	138, 306, 907		98, 788, 665		237, 095, 572	
		209, 276, 474		406, 159, 400		615, 435, 874
	209, 276, 474		406, 159, 400		615, 435, 874	
1870	81, 808, 364		57, 273, 925		139, 082, 289	
		291, 084, 838		463, 433, 325		754, 518, 163
	291, 084, 838		463, 433, 325		754, 518, 163	
1871	34, 304, 906		18, 269, 205		52, 574, 111	
		325, 389, 744		481, 702, 530		807, 092, 274
	325, 389, 744		481, 702, 530		807, 092, 274	
1872	26, 423, 080		12, 572, 675		38, 995, 755	
		351, 812, 824		494, 275, 205		846, 088, 029
	351, 812, 824		494, 275, 205		846, 088, 029	
1873	39, 204, 285		12, 810, 430		52, 014, 715	
		391, 017, 109		507, 085, 635		898, 102, 744
	391, 017, 109		507, 085, 635		898, 102, 744	
1874	71, 039, 928		20, 470, 470		91, 510, 398	
		462, 057, 037		527, 556, 105		989, 613, 142
	462, 057, 037		527, 556, 105		989, 613, 142	
1875	53, 047, 175		19, 755, 430		72, 802, 605	
		515, 104, 212		547, 311, 535		1, 062, 415, 747
	515, 104, 212		547, 311, 535		1, 062, 415, 747	

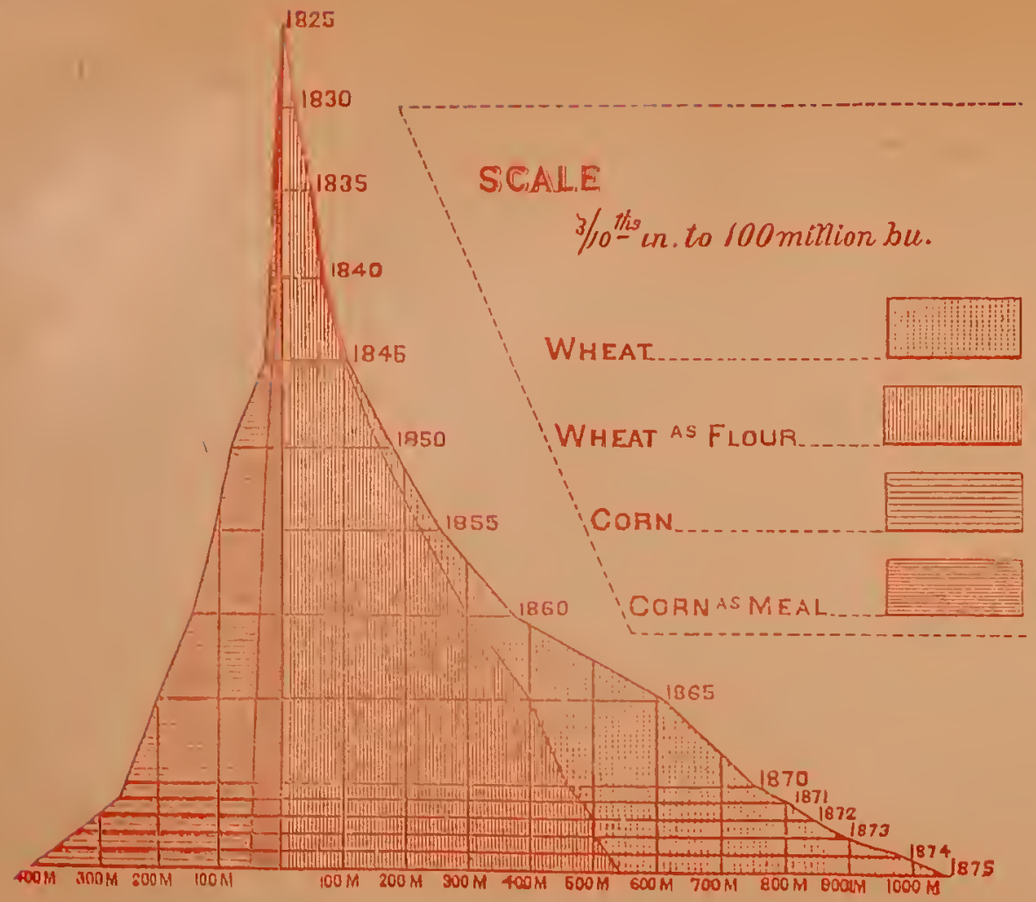
The value of wheat-exports for each half decade is thus given in detail:

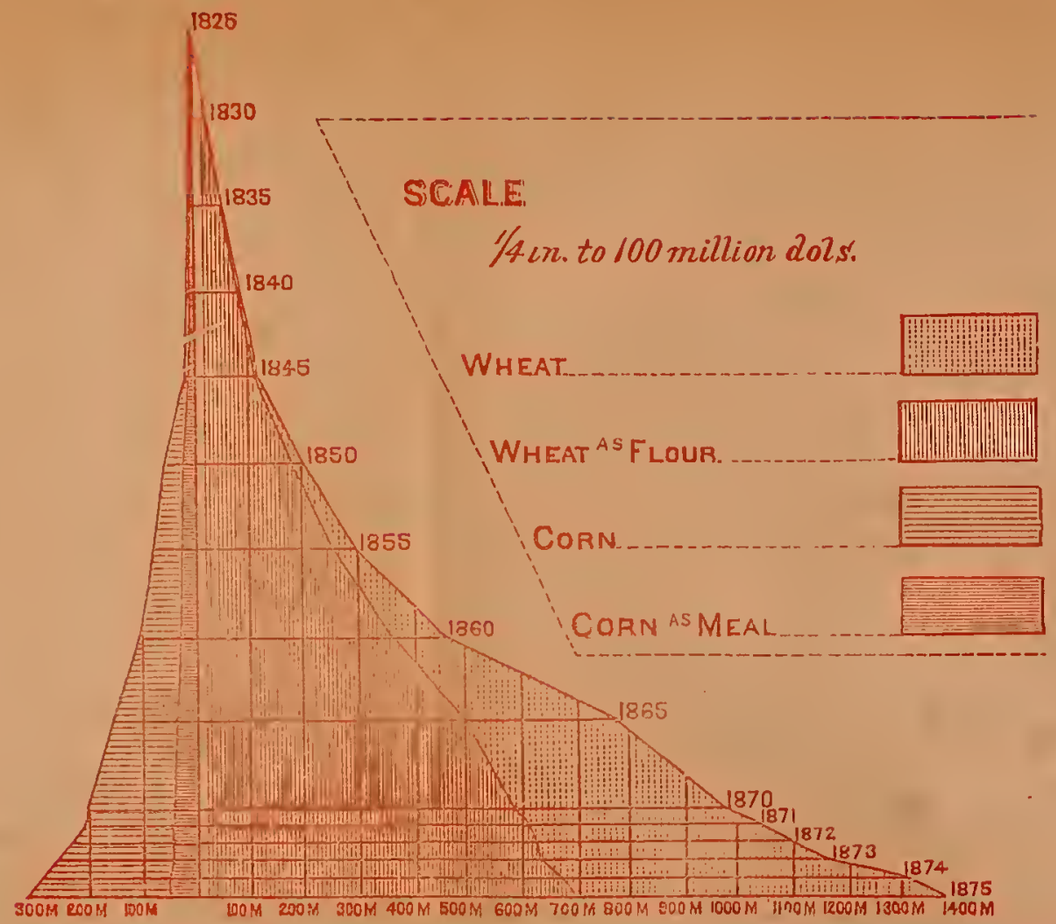
Year.	Wheat.		Flour.		Total value of wheat and flour.
	Value.	Value.	Value.	Value.	
1830	$112,754		$24,708,090		$24,820,844
1835	737,365		29,347,649		54,905,858
		$850,119		$54,055,739	
	850,119		54,055,739		
1840	1,817,067		27,231,952		83,954,877
		2,667,186		81,287,691	
	2,667,186		81,287,691		
1845	2,900,785		31,056,156		117,911,818
		5,567,971		112,343,847	
	5,567,971		112,343,847		
1850	12,801,093		69,375,741		200,088,652
		18,369,064		181,719,588	
	18,369,064		181,719,588		
1855	21,864,762		75,775,220		297,728,634
		40,233,826		257,494,808	
	40,233,826		257,494,808		
1860	53,343,918		104,368,446		455,440,998
		93,577,744		361,863,254	
	93,577,744		361,863,254		
1865	178,470,444		133,356,875		767,268,317
		272,048,188		495,220,129	
	272,048,188		495,220,129		
1870	117,527,424		92,071,717		976,867,458
		389,575,612		587,291,846	
	389,575,612		587,291,846		
1871	45,143,424		24,093,184		1,046,104,066
		434,719,036		611,385,030	
	434,719,036		611,385,030		
1872	38,915,060		17,955,684		1,102,974,810
		473,634,096		629,340,714	
	473,634,096		629,340,714		
1873	51,452,254		19,381,664		1,163,808,728
		525,086,350		648,722,378	
	525,086,350		648,722,378		
1874	101,421,459		29,258,094		1,304,488,281
		626,507,809		677,980,472	
	626,507,809		677,980,472		
1875	59,607,863		23,710,074		1,387,806,218
		686,115,672		701,690,546	
	686,115,672		701,690,546		


1845
1850
1855
1860
WHEAT...
WHEAT AS
CORN...
CORI
186
400 M 300 M 200 M 100 M
100 M 200 M 300 M 400 M 500 M 600 M 70

CORN AND WHEAT EXPORTS OF FIFTY YEARS.

1825 to 1875.





The corn and corn-meal exported are equivalent to the following aggregate of bushels of corn:

Year.	QUANTITY.				Total.
	Corn.		Corn-meal.		
	Bushels.	Bushels.	Bushels.	Bushels.	
1830	3,530,710		3,133,632		6,664,342
1835	2,568,946		3,269,532		
		6,099,656		6,403,164	12,502,820
	6,099,656		6,403,164		
1840	1,184,973		3,375,720		
		7,284,629		9,778,884	17,063,513
	7,284,629		9,778,884		
1845	3,474,109		4,530,996		
		10,758,738		14,309,880	25,068,618
	10,758,738		14,309,880		
1850	43,822,153		9,974,800		
		54,580,891		24,284,680	78,865,571
	54,580,891		24,284,680		
1855	23,905,196		4,485,824		
		78,486,087		28,770,504	107,256,591
	78,486,087		28,770,504		
1860	27,597,896		5,165,368		
		106,083,983		33,935,872	140,019,855
	106,083,983		33,935,872		
1865	52,612,028		4,706,428		
		158,696,011		38,642,300	197,338,311
	158,696,011		38,642,300		
1870	47,993,276		5,420,096		
		206,689,287		44,062,396	250,751,683
	206,689,287		44,062,396		
1871	9,826,309		850,564		
		216,515,596		44,912,960	261,428,556
	216,515,596		44,912,960		
1872	34,491,650		1,235,360		
		251,007,246		46,148,320	297,155,566
	251,007,246		46,148,320		
1873	38,541,930		1,612,444		
		289,549,176		47,760,764	337,309,940
	289,549,176		47,760,764		
1874	34,434,606		1,551,228		
		323,983,782		49,311,992	373,295,774
	323,983,782		49,311,992		
1875	28,858,420		1,166,616		
		352,842,202		50,478,608	403,320,810
	352,842,202		50,478,608		

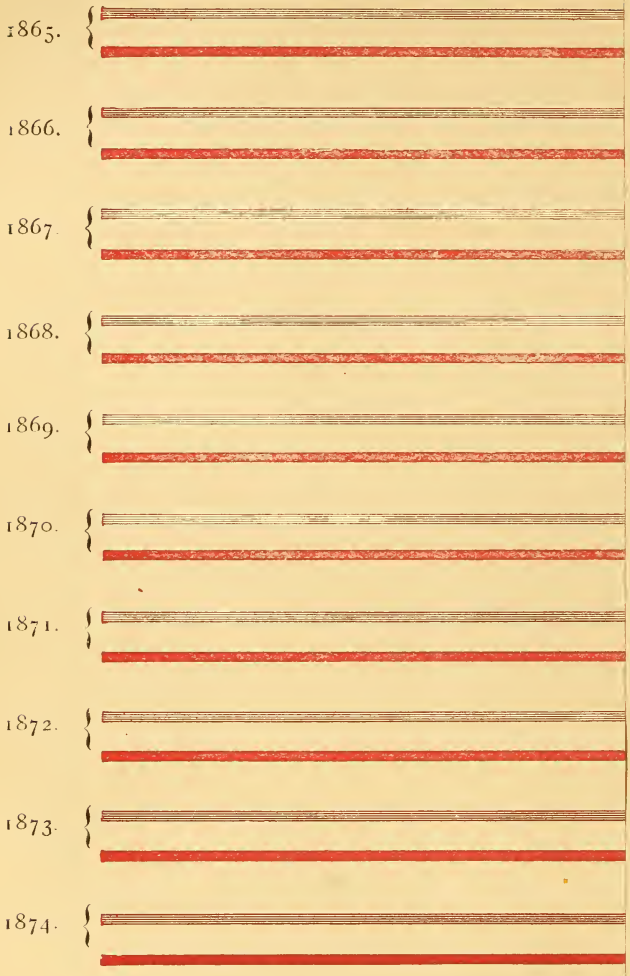
The value of corn and corn-meal, represented in connection with wheat in the second figure of the diagram, is as follows for the several periods:

Year.	Corn.		Corn-meal.		Total value of corn and corn-meal.	
	Value.	Value.	Value.	Value.		
1830	$2,019,926		$2,404,371		$4,424,297	
1835	1,804,711		2,731,077		4,535,788	
		$3,824,637		$5,135,448		$8,960,085
	3,824,637		5,135,448		8,960,085	
1840	873,104		3,471,215		4,344,319	
		4,697,741		8,606,663		13,304,404
	4,697,741		8,606,663		13,304,404	
1845	1,755,602		3,037,021		4,792,623	
		6,453,343		11,643,684		18,097,027
	6,453,343		11,643,684		18,097,027	
1850	31,277,920		8,984,252		40,262,172	
		37,731,263		20,627,936		58,359,199
	37,731,263		20,627,936		58,359,199	
1855	17,712,699		4,147,318		21,860,017	
		55,443,962		24,775,254		80,219,216
	55,443,962		24,775,254		80,219,216	
1860	19,789,181		4,917,515		24,706,696	
		75,233,143		29,692,769		104,925,912
	75,233,143		20,692,769		104,925,912	
1865	34,903,365		5,323,270		40,226,635	
		110,136,508		35,016,039		145,152,547
	110,136,508		35,016,039		145,152,547	
1870	47,143,817		7,345,448		54,488,265	
		157,280,325		42,361,487		199,641,812
	157,280,325		42,361,487		199,641,812	
1871	7,458,997		951,830		8,410,827	
		164,739,322		43,313,317		208,052,639
	164,739,322		43,313,317		208,052,639	
1872	23,984,365		1,214,999		25,199,364	
		188,723,687		44,528,316		233,252,003
	188,723,687		44,528,316		233,252,003	
1873	23,794,694		1,474,827		25,269,521	
		212,518,381		46,003,143		258,521,524
	212,518,381		46,003,143		258,521,524	
1874	24,769,951		1,529,399		26,299,350	
		237,288,332		47,532,542		284,820,874
	237,288,332		47,532,542		284,820,874	
1875	24,456,937		1,290,533		25,747,470	
		261,745,269		48,823,075		310,568,344
	261,745,269		48,823,075		310,568,344	

5. *Sugar-supply of twenty-five years*, with a comparison of quantities of native, and foreign. This diagram represents the annual production of Louisiana, together with the imports entering annually into consumption, by separate tints of color, on the scale of 200,000,000 pounds per inch. It shows that in 1850 half the requisite supplies were produced in Louisiana; now, from the vast increase in consumption, and decrease in production, less than one-tenth of our wants are supplied at home. The figures accompanying this diagram, which is not here produced, are as follows:

SCALE.

Light lines, 1 inch to ½ million bales.
Dark lines, 1 inch to 50 million dolls.



Years.	Louisiana.	Total.	Years.	Louisiana.	Total.
	Pounds.	*Pounds.*		*Pounds.*	*Pounds.*
1850	242, 881, 150	443, 908, 572	1864	7, 608, 200	611, 284, 468
1851	272, 029, 050	642, 792, 597	1865	17, 250, 000	594, 330, 143
1852	370, 224, 100	815, 663, 455	1866	47, 150, 000	1, 012, 799, 904
1853	505, 222, 600	944, 814, 232	1867	43, 294, 050	870, 526, 017
1854	398, 630, 250	792, 610, 363	1868	96, 894, 400	1, 195, 120, 418
1855	266, 141, 050	695, 021, 736	1869	100, 153, 560	1, 309, 847, 125
1856	85, 072, 400	597, 638, 166	1870	166, 613, 150	1, 396, 292, 065
1857	321, 651, 550	1, 078, 450, 344	1871	147, 730, 150	1, 327, 456, 300
1858	416, 640, 400	853, 994, 264	1872	124, 798, 000	1, 565, 760, 616
1859	255, 116, 000	870, 540, 053	1873	102, 932, 700	1, 525, 794, 971
1860	263, 071, 700	919, 346, 722	1874	134, 504, 691	1, 705, 193, 954
1861	528, 321, 500	1, 251, 620, 551			
1862		530, 832, 412	Total	4, 913, 980, 591	23, 960, 395, 447
1863		498, 846, 005			

6. *The cotton crop of ten years—effect of quantity upon value.*—This brings in juxtaposition the aggregate quantity and value of the crop for each year since 1865, one inch in length meaning a half million of bales or $50,000,000. It shows that when the quantity rose from 3,154,946 bales in 1869 to 4,352,317 bales in 1870, the price declined from 23.6 to 14.9 cents, so that the large crop brought $44,673,491 less than the medium crop preceding. The next year the crop declined to 2,974,351 bales, and the price rose to 19.3 cents. The high price of the first year was, of course, the result of the cotton-famine of the war-period.

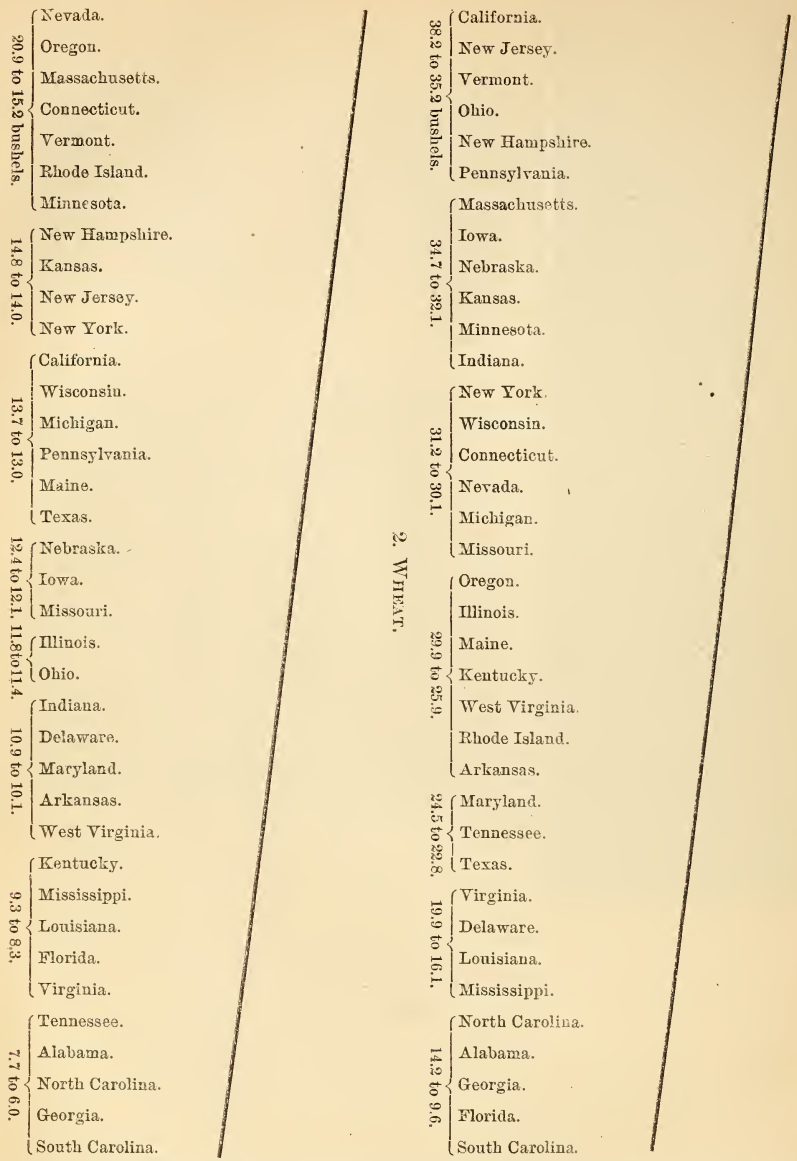
7. *Average yield per acre*, 1866–1875.—The estimates of area and production furnish means of making averages for a period which are truer and more instructive than the fluctuating averages of separate years. Those averages are not necessarily indices of fertility of soil, as Massachusetts, utterly insignificant in corn-production, stands far higher than Illinois. Fertilizers and special culture give larger results per acre than the richest soils. Illinois probably stands lower for this period of nine years than for any former period, having suffered for several seasons of drought and other unpropitious meteorological conditions. The average yields of corn and wheat are as follows:

THE COTTON CROP OF TEN YEARS.

Effect of quantity upon value.

SCALE.
Light lines, 1 inch to ½ million bales.
Dark lines, 1 inch to 50 million dolls.

	QUANTITY.	VALUE.
1865.	2,193,987 bales.	$440,728,108 @ 43.2c.
1866.	2,019,774 bales.	$285,515,252 @ 30.4c.
1867	2,593,993 bales.	$234,004,108 @ 19 4c.
1868.	2,439,039 bales.	$285,806,59c @ 25.2c.
1869.	3,154,946 bales.	$346,223,774 @ 23.6c.
1870	4,352,317 bales.	$301,550,283 @ 14.9c.
1871.	2,974,351 bales.	$266,933,130 @ 19 3c.
1872.	3,930,508 bales.	$345,432,695 @ 18.9c.
1873.	4,170,388 bales.	$300,580,715 @ 15.5c.
1871.	3,832,991 bales.	$269,133,463 @ 15.1c.



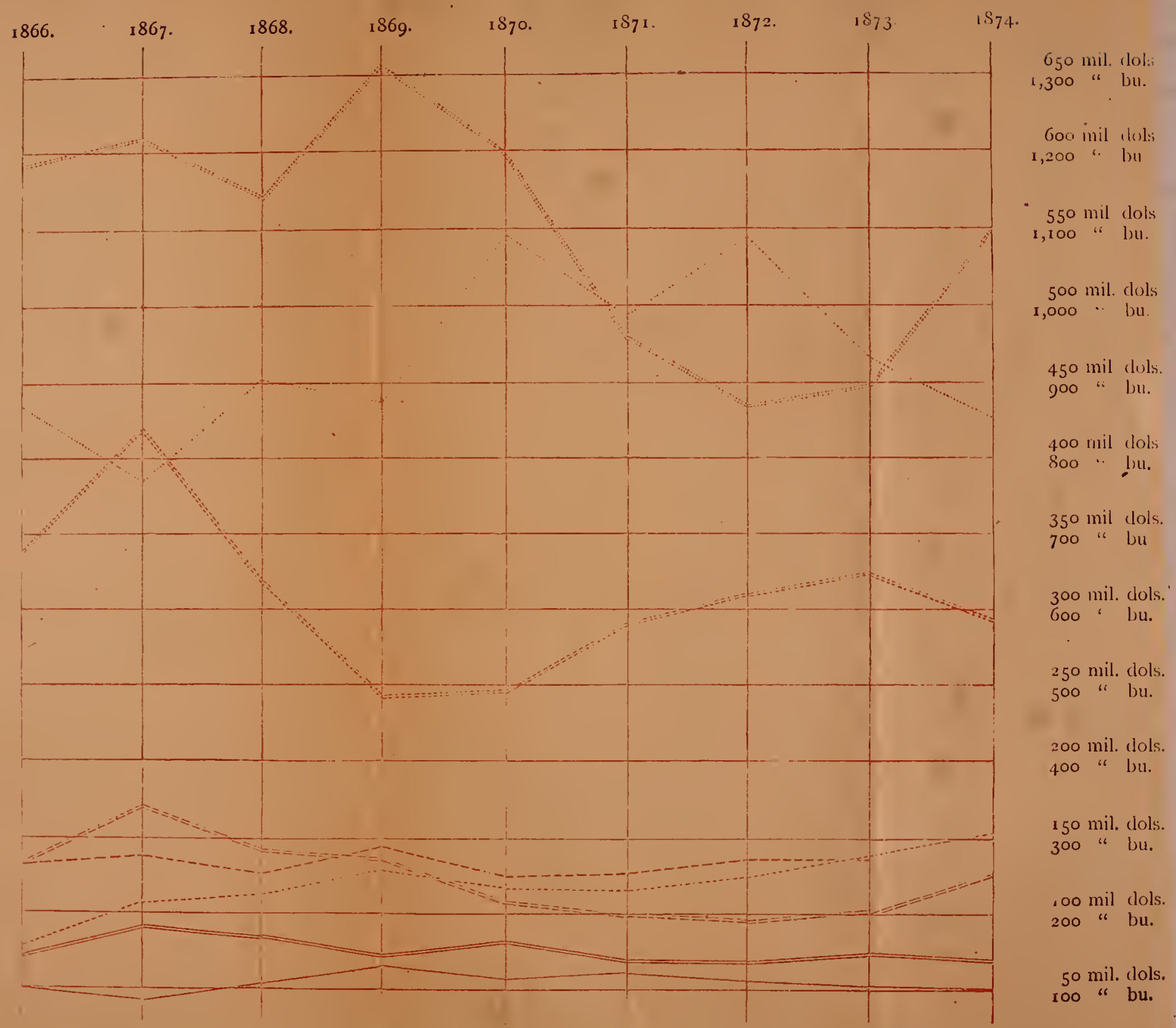
8. *Aggregate value of principal crops*, being an average from 1866 to 1874, inclusive. This diagram is a line-illustration on the scale of 100,000,000 to the square inch, which shows that corn leads all our crops, hay next, (grass as pasturage not included,) and wheat and cotton are almost exactly equal. These averages are as follows:

Corn	$549, 238, 907	Potatoes	$76, 356, 914
Hay	343, 111, 450	Tobacco	34, 439, 809
Wheat	308, 983, 272	Barley	23, 374, 788
Cotton	308, 590, 811	Rye	18, 695, 826
Oats	123, 867, 426	Buckwheat	12, 943, 912

873.
1874.
650 mil. dol
1,300 " bu.
600 mil dols.
1,200 " bu
550 mil dols
1,100 " bu.
500 mil dols
1,000 " bu
SCALE:
Quantity of Corn
Value "
450 mil dols.
900 " bu.
Quantity of Wheat
Value "
400 mil dols
800 " bu.
Quantity of Oats
Value "
350 mil dols.
700 " bu
300 mil. dols.
600 " bu.
Quantity of potatoes
Value "
250 mil. dols.
500 " bu.
200 mil. dols.
400 " bu.
150 mil. dols.
300 " bu.
100 mil dols.
200 " bu.
50 mil. dols.
100 " bu.

AGGREGATE PRODUCT OF CORN, WHEAT, OATS, AND POTATOES.

Effect of quantity on value.



SCALE:

Quantity of Corn .....

Value " .....

Quantity of Wheat .....

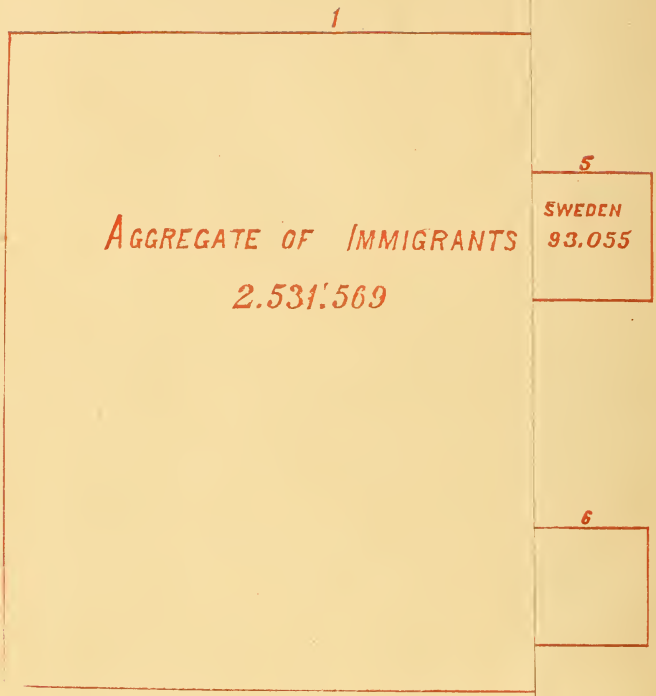
Value " .....

Quantity of Oats - - - -

Value " - - - -

Quantity of potatoes ——

Value " ——



1. Aggregate for all countries	2,53	12,973
2. Great Britain and Ireland	99	7,561
3. Germany	86	7,370
4. North America	21	6,847
5. Sweden	9	5,005
6. Norway	7	1,390

9. *Aggregate product of corn, wheat, and potatoes—effect of quantity upon value.*—This diagram shows the course of production through eight years. The scale is arranged to illustrate quantities by lines representing one hundred, two hundred, up to thirteen hundred millions of bushels, and when used to illustrate value the same lines mean fifty, one hundred, up to six hundred and fifty millions of dollars. Tracing the line representing corn, starting at less than nine hundred million bushels, it falls one hundred millions in 1869, and at 1870 and 1872, respectively, it nearly reaches eleven hundred million. Then following the upper line, showing the value of corn, nearly $600,000,000 in 1856—a rise in value attends a decline in quantity, and *vice versa*, the only exception being in 1871, when the surplus of the preceding year made the supply a very full one, while the great crop of 1872 struck with panic the corn-markets, and completely demoralized prices. The prices of corn are controlled almost exclusively by the quantity produced, as the market cannot be "cornered," and the export of 3 per cent. is scarcely a disturbing element; in this instance, foreign demand does not fix the prevailing home-price. With wheat it is different, as the lines show, in some years prices continuing to rise with a rise in quantity, caused by poor crops in Europe.

10. *Wages of farm-labor—monthly rate without board, 1866 and 1875.*—This diagram shows the monthly rate of each State, in both the years named, from the exhaustive investigations of the Department. The scale of line-illustrations is $10 per inch. There is shown a decline in wages, except in some of the Southern States, where labor is becoming more efficient and valuable, and in Oregon, where a scarcity exists. The figures are as follows:

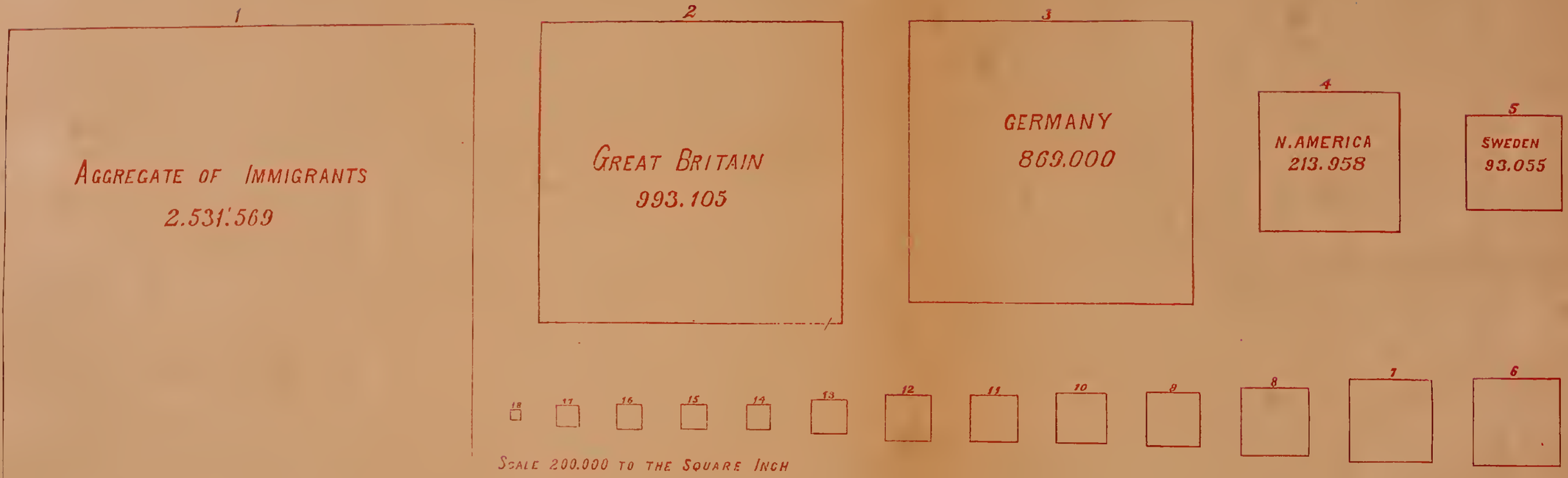
States.	1866.	1875.	States.	1866.	1875.
Maine	$27 00	$25 40	Louisiana	$20 50	$18 40
New Hampshire	32 74	28 57	Texas	19 00	19 50
Vermont	32 84	29 67	Arkansas	21 21	20 50
Massachusetts	38 94	31 87	Tennessee	19 00	15 20
Rhode Island	34 40	30 00	West Virginia	25 35	20 75
Connecticut	34 25	28 25	Kentucky	20 23	18 12
New York	29 57	27 14	Ohio	28 46	24 65
New Jersey	32 27	30 71	Michigan	31 20	28 22
Pennsylvania	29 91	25 89	Indiana	27 71	24 20
Delaware	24 93	20 33	Illinois	28 54	25 20
Maryland	20 36	20 02	Wisconsin	30 84	25 50
Virginia	14 82	14 84	Minnesota	31 65	26 16
North Carolina	13 46	13 46	Iowa	28 34	24 35
South Carolina	12 00	12 84	Missouri	26 75	19 40
Georgia	15 51	14 40	Kansas	31 03	23 20
Florida	18 00	15 50	Nebraska	38 37	24 00
Alabama	13 40	13 60	California	45 71	44 70
Mississippi	16 72	16 40	Oregon	35 75	38 25

11. *Immigration of seven years—comparison of its sources.*—In further illustration of labor interests, this diagram shows the sources of our supply from other countries. Great Britain furnishes 39 per cent. and Germany 34—all other nationalities little more than a fourth of the whole.

12. *Comparative area of the public-land States.*—This diagram illustrates the superficial area of each State by square figures drawn to a scale of 25,000,000 acres per square inch. The proportion surveyed in 1874 is indicated by shading, as also the area actually appropriated up to 1870.

IMMIGRATION OF SEVEN YEARS.

Comparison of its sources.



1.	Aggregate for all countries	2,531,569	7. Asia	76,690	13. Netherlands	12,973
2.	Great Britain and Ireland	993,105	8. France	47,252	14. Russia	7,561
3.	Germany	869,000	9. Austro-Hungary	27,750	15. Poland	7,370
4.	North America	213,958	10. Italy, including Sicily and Malta	25,935	16. Belgium	6,847
5.	Sweden	93,053	11. Switzerland	23,469	17. Spain	5,005
6.	Norway	78,036	12. Denmark	21,977	18. Portugal	1,390

The figures are as follows:

States and Territories.	Area in acres.	Acres surveyed.	Acres appropriated.
California	120, 947, 840	38, 805, 776	20, 877, 662
Dakota Territory	96, 596, 128	13, 863, 913	5, 835, 604
Montana Territory	92, 016, 640	6, 784, 481	5, 179, 821
New Mexico Territory	77, 568, 640	5, 486, 185	6, 864, 082
Arizona Territory	72, 906, 240	3, 135, 753	4, 050, 350
Nevada	71, 737, 600	8, 198, 194	4, 669, 383
Colorado Territory	66, 880, 000	15, 683, 086	4, 303, 329
Wyoming Territory	62, 645, 068	4, 748, 841	3, 480, 281
Oregon	60, 975, 360	15, 255, 617	9, 515, 744
Idaho Territory	55, 228, 160	4, 014, 953	3, 102, 407
Utah Territory	54, 065, 042	5, 984, 792	5, 315, 086
Minnesota	53, 459, 840	35, 897, 912	19, 516, 340
Kansas	52, 043, 520	45, 770, 685	10, 544, 439
Nebraska	48, 636, 800	32, 372, 410	8, 869, 943
Washington Territory	44, 796, 160	10, 190, 046	3, 556, 967
Indian Territory	44, 154, 240	22, 832, 725	.....
Missouri	41, 284, 000	41, 284, 000	40, 549, 368
Florida	37, 931, 520	29, 345, 870	20, 643, 611
Michigan	36, 128, 640	36, 128, 640	32, 468, 110
Illinois	35, 462, 400	35, 462, 400	35, 462, 400
Iowa	35, 228, 800	35, 228, 800	34, 036, 220
Wisconsin	34, 511, 360	34, 511, 360	26, 118, 729
Alabama	34, 462, 080	34, 462, 080	28, 522, 448
Arkansas	33, 406, 720	33, 406, 720	22, 463, 872
Mississippi	30, 179, 840	30, 179, 840	25, 531, 387
Louisiana	26, 461, 440	23, 909, 253	20, 033, 897
Ohio	25, 576, 960	25, 576, 960	25, 576, 960

13. *Aggregate value of farm-animals—average from* 1846 *to* 1871, *inclusive.*—This diagram represents these values as follows: Cattle, $646,214,801; horses, $600,782,233; mules, $108,033,293; swine, $146,417,611; sheep, $94,491,942.

CHARTS.—Several charts embody the numbers and prices of farm-animals, taken from the statistical estimates of 1876, which are as follows:

Table showing the estimated value and average price of horses, mules, and cows and other cattle, January, 1876.

States.	Horses.		Mules.		Milch cows.		Oxen and other cattle.	
	Value.	Average price.	Value.	Average price.	Value.	Average price.	Value.	Average price.
Maine	$6, 463, 954	$81. 41	.....	.....	$6, 079, 100	$37. 00	$7, 155, 336	$35. 44
New Hampshire	3, 804, 180	80. 94	.....	.....	3, 780, 700	38. 50	4, 498, 160	38. 12
Vermont	6, 201, 380	83. 24	.....	.....	7, 060, 150	33. 70	3, 827, 565	29. 33
Massachusetts	9, 416, 718	89. 94	.....	.....	6, 780, 699	48. 33	5, 710, 800	47. 59
Rhode Island	1, 438, 689	97. 87	.....	.....	795, 600	39. 00	795, 520	49. 72
Connecticut	4, 197, 354	82. 14	.....	.....	4, 605, 297	43. 33	4, 185, 188	36. 68
New York	61, 119, 000	90. 00	$1, 819, 475	$98. 35	56, 111, 250	37. 50	21, 122, 920	31. 85
New Jersey	12, 824, 188	110. 84	1, 924, 800	128. 32	6, 429, 213	44. 37	3, 037, 800	36. 60
Pennsylvania	49, 557, 970	84. 70	2, 528, 745	96. 15	29, 027, 160	34. 68	20, 556, 143	29. 03
Delaware	1, 635, 620	83. 45	380, 000	95. 00	736, 000	32. 00	783, 624	24. 72
Maryland	8, 779, 710	83. 22	1, 164, 460	105. 86	3, 052, 217	30. 31	2, 728, 391	22. 87
Virginia	13, 551, 397	69. 53	2, 550, 880	85. 60	5, 168, 790	22. 77	6, 701, 850	16. 86
North Carolina	10, 473, 309	74. 97	4, 267, 318	82. 54	3, 111, 480	15. 48	3, 191, 508	10. 19
South Carolina	5, 040, 202	88. 58	4, 204, 929	94. 07	3, 146, 175	19. 75	2, 182, 523	11. 69
Georgia	9, 389. 471	79. 37	8, 380, 944	87. 12	4, 512, 002	17. 02	3, 572, 019	8. 91
Florida	1, 306, 274	78. 22	879, 840	91. 65	976, 616	14. 62	2, 958, 076	8. 14
Alabama	7, 449, 984	71. 36	8, 132, 280	80. 20	3, 409, 414	20. 27	4, 186, 167	12. 79
Mississippi	6, 775, 164	76. 04	9, 328, 427	97. 07	3, 671, 838	21. 03	3, 639, 135	11. 85
Louisiana	4, 484, 914	58. 78	6, 708, 404	83. 96	1, 855, 616	20. 71	2, 007, 792	11. 68
Texas	25, 554, 168	33. 17	5, 932, 413	53. 59	7, 861, 572	15. 72	22, 429, 209	9. 57
Arkansas	8, 591, 901	54. 09	5, 629, 500	67. 50	2, 606, 580	16. 20	2, 775, 006	10. 62
Tennessee	19, 919, 520	62. 64	6, 910, 858	67. 82	4, 701, 331	20. 83	3, 945, 903	12. 19
West Virginia	6, 651, 336	59. 44	163, 392	68. 08	3, 234, 135	25. 77	5, 087, 376	21. 63
Kentucky	20, 766, 018	56. 94	5, 009, 050	58. 93	6, 836, 918	27. 94	8, 236, 144	21. 14

AGGREGATE VALUE OF FARM ANIMALS.

Annual average from 1866 to 1874, inclusive

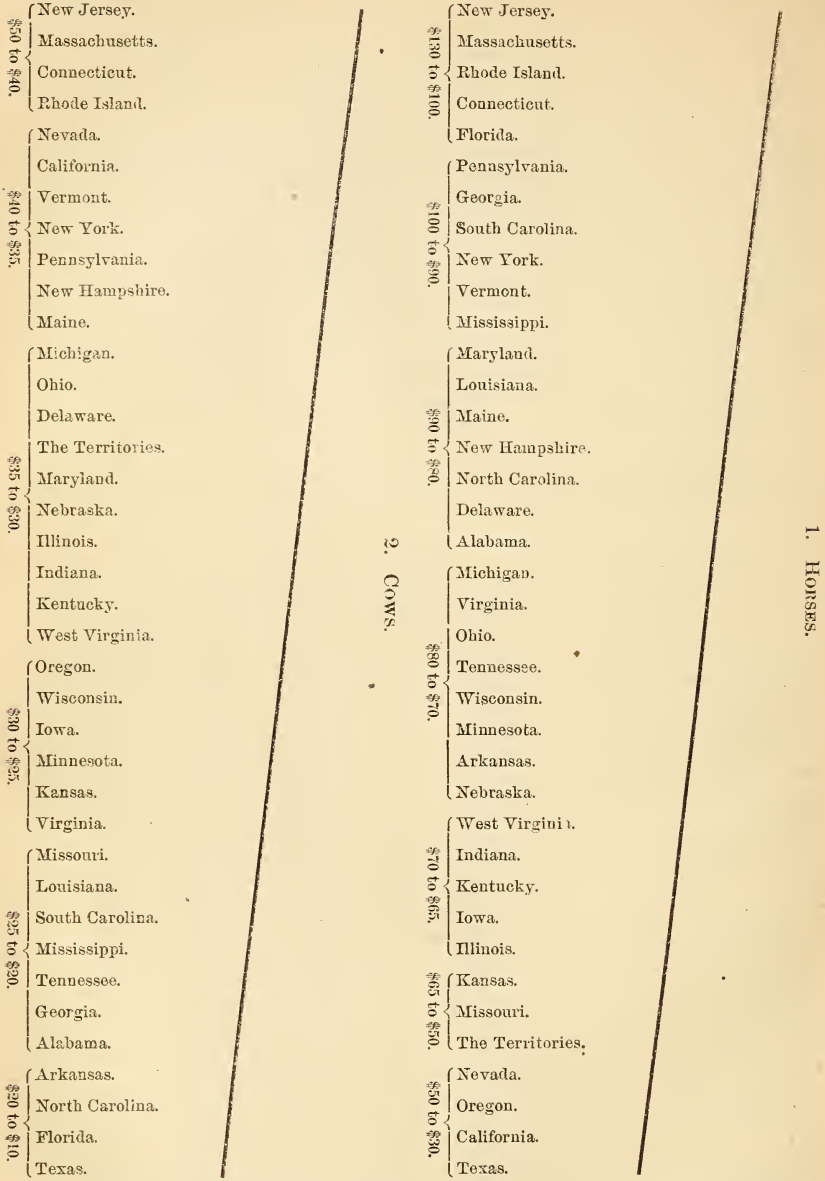
Table showing the estimated value and average price of horses, &c.—Continued.

States.	Horses.		Mules.		Milch cows.		Oxen and other cattle.	
	Value.	Average price.	Value.	Average price.	Value.	Average price.	Value.	Average price.
Ohio	$52,601,712	$69.14	$1,909,060	$72.04	$26,433,446	$42.65	$24,510,063	$24.87
Michigan	24,437,839	82.31	365,256	96.12	12,169,070	33.70	10,803,500	26.35
Indiana	41,725,056	61.76	4,187,864	71.71	11,916,260	27.40	15,175,695	19.45
Illinois	65,229,075	59.75	7,929,207	71.37	20,852,000	29.05	27,721,980	21.54
Wisconsin	23,608,305	67.05	444,352	85.26	12,679,500	26.75	9,153,671	20.20
Minnesota	12,945,516	75.09	306,528	95.70	5,881,865	25.10	6,006,475	20.65
Iowa	43,774,614	63.83	3,041,770	82.21	16,726,420	26.90	19,095,912	20.91
Missouri	26,400,100	45.40	7,070,986	56.03	9,140,854	20.86	14,143,844	17.32
Kansas	14,289,899	49.63	1,333,080	64.40	5,600,252	23.70	9,213,430	18.95
Nebraska	4,713,615	69.42	450,800	98.00	1,676,973	28.00	1,804,044	20.76
California	9,514,778	45.46	1,497,650	77.20	11,445,148	31.46	21,586,060	20.08
Oregon	3,900,952	42.68	169,016	45.68	1,759,575	21.75	1,754,400	12.75
Nevada	588,600	54.00	85,800	78.00	326,700	33.00	980,700	21.00
The Territories	6,330,500	55.00	1,859,000	71.50	7,988,750	27.50	14,761,080	18.75
Total	632,446,985	.....	106,565,114	....	320,316,728	.....	319,623,509	.....
Grand average of prices	.....	64.96	.....	75.33	.....	28.89	.....	19.94

Table showing the estimated number, average price, and value of sheep and swine January, 1876.

State.	Sheep.			Swine.		
	Number.	Average price.	Value.	Number.	Average price.	Value.
Maine	525,900	$3 78	$1,987,902	58,800	$11 66	$685,608
New Hampshire	242,400	2 70	654,480	37,300	16 20	604,260
Vermont	490,500	3 74	1,834,470	51,800	12 19	631,442
Massachusetts	76,300	3 63	276,969	75,600	18 03	1,363,068
Rhode Island	25,300	3 96	100,188	16,300	17 05	277,915
Connecticut	92,500	4 18	386,650	57,900	16 73	968,667
New York	1,936,500	3 95	7,649,175	568,700	11 39	6,477,493
New Jersey	125,800	5 01	630,258	173,000	13 83	2,115,090
Pennsylvania	1,640,500	3 58	5,872,990	875,000	11 50	10,062,500
Delaware	23,600	3 67	86,612	46,700	10 61	495,487
Maryland	141,200	3 89	549,268	233,500	7 10	1,657,850
Virginia	356,400	2 93	1,044,252	589,800	4 45	2,624,610
North Carolina	283,800	1 58	448,562	758,300	4 01	3,040,783
South Carolina	142,700	1 81	258,287	275,900	4 11	1,133,949
Georgia	371,200	1 73	642,176	1,360,700	3 91	5,320,337
Florida	37,800	1 94	73,332	175,400	2 26	396,404
Alabama	185,900	1 93	358,787	755,900	3 99	3,016,041
Mississippi	151,800	1 81	274,758	792,900	4 31	3,417,399
Louisiana	68,800	2 04	140,352	222,600	3 98	885,948
Texas	1,691,400	2 00	3,382,800	1,090,000	4 00	4,458,100
Arkansas	192,400	2 01	386,724	901,200	3 91	3,523,692
Tennessee	341,700	2 11	720,987	1,026,400	5 22	5,357,808
West Virginia	544,500	2 55	1,388,475	248,400	5 38	1,336,392
Kentucky	683,600	2 85	1,948,260	1,604,300	5 51	8,839,693
Ohio	4,546,600	2 72	12,366,752	1,596,100	8 06	12,864,566
Michigan	3,450,600	2 65	9,144,090	430,700	7 93	3,645,421
Indiana	1,250,000	2 62	3,275,000	2,136,000	7 70	16,447,200
Illinois	1,311,000	2 41	3,159,510	2,640,100	8 63	22,784,063
Wisconsin	1,162,800	2 74	3,186,072	540,700	7 58	4,098,506
Minnesota	190,200	2 63	500,226	213,400	6 90	1,491,660
Iowa	1,663,900	2 66	4,425,974	3,296,200	8 08	26,633,296
Missouri	1,284,200	1 86	2,388,612	1,874,400	5 94	11,133,336
Kansas	123,900	2 80	346,920	246,500	8 91	2,196,315
Nebraska	48,900	2 77	135,453	80,900	7 58	613,222
California	6,750,000	2 02	13,635,000	363,300	7 17	2,604,861
Oregon	710,500	1 99	1,413,895	181,500	4 41	800,415
Nevada	20,900	2 60	54,340	5,200	9 00	46,800
The Territories	3,049,200	2 80	8,537,760	116,500	8 75	1,019,375
Total	35,935,300	.....	93,666,318	25,726,800	.....	175,670,484
Grand average of prices	.....	2 60	.....	.....	6 80	.....

The comparative value of horses and cows in the several States is thus presented:



In connection with these charts are type specimens (in lithograph, black and tint) of breeds of farm-animals most popular and generally distributed. These are—

a. Shorthorn bull, (Bates,) Duke of Airdrie, (12,730.)
b. Shorthorn cow, (Bates,) Dutchess of Geneva.
c. Shorthorn bull, (Booth,) Breastplate, (11,431.)
d. Shorthorn grade steer.

e. Devon bull, Huron.
f. Jersey bull, King of Prairie.
g. Dutch cow, Infrau.
h. Ayrshire grade, "Old Creamer."

The second is the famous cow that brought, at auction, $40,000; the last, the cow that gave 100 pounds of milk, daily, for thirty days.

Another series of charts illustrates the statistics of agricultural education, accompanied by the following illustrations (wood engraving upon lithographic tint) of college-buildings, as follows:

a. College of Agriculture and the Mechanic Arts at Hanover, N. H.
b. Institute of Technology at Boston, Mass.
c. Agricultural College at Amherst, Mass.
d. College of Agriculture, (Cornell University,) Ithaca, N. Y.
e. Agricultural and Mechanical College, Columbus, Ohio.
f. Industrial University at Urbana, Ill.
g. "Ashland," homestead of Henry Clay, regents' residence, Kentucky University, Lexington, Ky.
h. College of Agriculture at Berkeley, Cal.
i. Female College, University of Wisconsin, Milwaukee, Wis.
k. College of Agriculture, Lincoln, Neb.
l. Industrial University, Fayetteville, Ark.

A portion of these statistics of our industrial system are given in the following tables:

State.	Number of acres donated by Congress.	Number of acres sold.	Number of professors and assistants in the agricultural and mechanical college.	Number of students in the agricultural and mechanical college.	Number of students in the university with which the college is connected.
Alabama	240,000	240,000	8	88	.....
Arkansas	150,000	150,000	7	9	248
California	150,000	150,000	27	85	231
Connecticut	180,000	180,000	29	224	1,061
Delaware	90,000	90,000	8	42	.....
Florida	90,000	90,000	.....	.....	.....
Georgia	270,000	270,000	15	344	487
Illinois	480,000	454,560	24	131	374
Indiana	390,000	390,000	7	.....	57
Iowa	240,000	63,025	17	277	.....
Kansas	90,000	57,495	15	237	.....
Kentucky	330,000	330,000	8	95	240
Louisiana	210,000	210,000	6	225	.....
Maine	210,000	210,000	8	115	.....
Maryland	210,000	210,000	5	52	.....
Massachusetts	360,000	360,000	48	391	.....
Michigan	240,000	75,584	14	156	.....
Minnesota	120,000	64,997	10	9	287
Mississippi	210,000	210,000	11	5	222
Missouri	330,000	1,571	19	142	491
Nebraska	90,000	.....	4	20	142
Nevada	90,000	.....	14	29	479
New Hampshire	150,000	150,000	11	57	188
New Jersey	210,000	210,000	30	73	532
New York	990,000	580,800	5	7	70
North Carolina	270,000	270,000	11	100	.....
Ohio	630,000	630,000	6	60	135
Oregon	90,000	700	12	148	.....
Pennsylvania	780,000	780,000	13	40	455
Rhode Island	120,000	120,000	2	20	249
South Carolina	180,000	180,000	16	53	315
Tennessee	300,000	300,000	.....	.....	.....
Texas	180,000	180,000	7	14	150
Vermont	150,000	150,000	26	453	.....
Virginia	300,000	300,000	5	15	120
West Virginia	150,000	150,000	14	17	345
Wisconsin	240,000	187,597	.....	.....	.....
Total	9,510,000	7,926,329	463	3,703	6,616

From the above statement it appears that 84 per cent. of the donated lands have been sold; and the following shows the property already invested in industrial education aggregates seventeen and a half millions:

States.	Acres in farms.	Value of farms.	Value of buildings.	Value of all college property.
Alabama	200	$2,000	$100,000	$327,500
Arkansas	160	12,000	5,000	300,000
California	200	.....	.....	1,087,500
Connecticut	.....	.....	225,000	614,000
Delaware	70	15,000	50,000	139,000
Florida	.....	.....	.....	100,134
Georgia	70	2,500	200,000	346,000
Illinois	623	60,000	200,000	866,308
Indiana	184	60,000	25,000	510,000
Iowa	870	10,584	237,000	968,899
Kansas	415	3,000	31,000	452,782
Kentucky	433	130,000	120,000	311,000
Maine	370	.....	65,000	258,620
Maryland	270	13,500	60,000	210,000
Massachusetts	383	37,500	163,500	1,460,627
Michigan	676	10,148	109,500	929,699
Minnesota	143	8,500	1,200	357,250
Mississippi	310	5,100	100,000	229,515
Missouri	600	60,000	75,000	.....
Nebraska	480	.....	.....	468,000
New Hampshire	163	15,000	50,000	240,000
New Jersey	99	30,000	75,000	292,200
New York	200	40,000	560,000	2,651,998
Ohio	320	112,000	.....	904,000
Oregon	36	5,000	6,000	239,000
Pennsylvania	600	59,136	300,000	897,589
Rhode Island	.....	.....	.....	56,000
South Carolina	116	9,000	35,000	200,800
Tennessee	260	30,000	53,000	397,190
Texas	800	.....	.....	291,240
Vermont	.....	.....	.....	416,972
Virginia	369	39,740	89,000	491,448
West Virginia	25	.....	80,000	155,000
Wisconsin	234	.....	164,000	359,204
Total	.....	.....	.....	17,535,475

To conclude the series of exhibits, the smaller diagrams, the charts in the show-frame illustrating the above-named branches of statistical exposition, together with further letter-press illustration of the real extent of our agricultural resources and present production, are gathered together in the form of a statistical album, for preservation of the substance of the exhibits, and as a fragmentary record of a century's progress and memorial of the great centennial anniversary.

DIGEST OF CROP-RETURNS FOR JUNE.

WINTER-WHEAT.

In the Northern States the conditions of weather, in April and May, were generally favorable for the grain-crop, and it has suffered very little from insect attacks or other injuries; but, though the crop of winter-wheat on the ground is generally thrifty, yet, owing to extensive injuries from the open winter, the prospect is not favorable for a large yield. Among the States in the entire northern section, which grow

winter-wheat to any extent, Michigan alone comes up to average. Previous reports indicated that that State was favored above the others with a more permanent covering of snow. New York averages about 18 below good condition. In several counties the fact is noted that drilled wheat stood the winter better, and was generally more prosperous than that sown broadcast; also, that while the crop was badly winter-killed on poor or poorly cultivated soil it came through unharmed on that well fertilized and cultivated. The only counties reporting above average are Wayne and Erie, 110, and Ontario and Montgomery, 105; which, except the last-named, are among the heavier counties. The heaviest winter-wheat county, Monroe, returns 90: Livingston, the next heaviest, 50, though that sown early on well-drained land is promising; Genesee is 55.

The average condition in Pennsylvania is 93. Lancaster, the great wheat county of the State, returns 105. "The Fultz wheat has the best appearance wherever it is sown, and the general feeling among farmers is that it is the wheat for Lancaster County." The old Mediterranean wheat, long grown there, "does not make a full crop any more, and is more subject to the fly and also to lodge." York, the next county in production, also promises above average. Delaware, Tioga, Bedford, McKean, and Fulton report 110; Forest, 105; 16 counties, 100; the remainder range from 95 down to 50, Lawrence, Columbia, and Montour being at the latter figure.

In the South Atlantic States the mild winter has been followed generally by very favorable weather, resulting in a condition of extraordinary promise. In Delaware, 105, and Maryland, 108, there are no drawbacks of any kind reported, and no counties below average, the range being from 100 to 120. In Virginia, 112, only seven returns out of sixty-eight fall below average. A hard freeze about the last of April did considerable injury to a previously very promising crop in several counties. Injuries from the presence of the fly are noted in Fairfax, King George, Madison, Clarke, James City, and Middlesex. They are not represented as serious except in Clarke, and even there have not reduced the promise below average. Rust had appeared in Prince William, Richland, Lancaster, Middlesex, and Dinwiddie, but was mostly confined to the blade, and, except some pieces sown late, the crop was too far advanced before its appearance to be seriously injured.

In North Carolina, 104, while in a large majority of the returns the condition ranges from 100 up to 125, it has been reduced in Moore by the fly, in Lincoln by an insect never before seen, resembling the cabbage-louse; and in Gaston, Nash, Duplin, Stokes, Wilkes, and Lincoln by rust. In Person, where the condition is very fine, Fultz wheat is the favorite.

Farther south the rust has been more general and damaging. In Georgia it has reduced a very promising condition to 16 per cent. below average; in Alabama, 12 per cent. below; Mississippi, 25 per cent. below; and in Texas the grasshopper, to a small extent, and more generally the fly, have conspired with rust to bring the condition down to 21 below. In Arkansas, owing almost exclusively to rust, the condition is reduced to 73. Ravages of insects are noted only in Benton, in which both chinches and the Hessian fly have been at work. In Tennessee, also, the complaint of rust is almost universal, but, being mainly confined to the blade, it has not reduced the condition below average.

West Virginia appears to have escaped all drawbacks, except slight injuries from winter-killing and a late freeze, and rises 6 per cent. above average. The crop in Kentucky suffered extensively from dry weather

in May. Owing to this cause chiefly it falls 8 per cent. below average. The presence of rust is noted in three counties, and there were slight injuries from winter-killing and freezes in the spring.

In the States bordering the Ohio on the north, as previously reported, the open, changeable winter was very disastrous to the crop, reducing the condition, with respect to promised yield, to 66 in Ohio and Indiana, and 78 in Illinois. The thriftiness of that which escaped winter-killing or freezing out is generally assumed, though "the fly and bug" are reported in Adams, and injuries from wet and freezing weather in Vinton and Wood, Ohio; from drought in Warwick and Dubois, Indiana; and from "the hard freeze in March" in Effingham and Williamson, Illinois.

Beyond the Mississippi, among the winter-wheat States, Missouri falls about two per cent. below average condition. The principal causes of reduction reported, are an unfavorable start, owing to the protracted drought last autumn; more or less injury by the fly in Douglas, Stone, Phelps, Dallas, and Wright; rust in Stone, McDonald, Johnson, Mississippi, and Reynolds; and chinches in Shelby.

In Kansas, the condition is extraordinarily good; out of 42 returns all except 5 are above 100, and many of them range from 110 up to 200. In Shawnee, rust has reduced a fine promise to half a crop, and its appearance is noted in three or four other counties. The average for the State is 108. In Nebraska, which grows very little winter-wheat, the condition is 110.

Only three returns from California fall below average, the others ranging from 100 to 125. But two of the three, Santa Clara, 85, and Stanislaus, 75, being two of the heaviest wheat counties, the State average is brought down somewhat below 100. In the former county, while early-sown wheat is in good condition, "late will not yield more than half a crop;" in the latter "the fields are very foul, owing to excessive wet weather, and the heads have not filled well."

From Oregon, all returns are favorable, making the State average 1 04.

The average condition for the entire country is little above 87.

NEW HAMPSHIRE.—*Rockingham:* Somewhat winter-killed.

VERMONT.—*Grand Isle:* Winter-killed.

CONNECTICUT.—*New-London:* Somewhat winter-killed.

NEW YORK.—*Yates:* On ground well manured, doing nicely; on poor ground, badly winter-killed. *Albany:* Very spotted; a great portion very poor. Sown with a drill, on ground well cultivated and fertilized, it looks well. *Schoharie:* Badly winter-killed; not half a crop. *Steuben:* Badly injured by the open winter. *Washington:* Never looked poorer. *Livingston:* Sown early on dry land, looking very well; on clay and low lands, very poor. *Saratoga:* Considerably injured during the winter. *Wyoming:* Looking very poorly. *Genesee:* Badly winter-killed, but that left is doing finely. *Orange:* Injured by winter-killing. *Seneca:* An open winter with severe changes ruined many pieces. Spring-wheat is being substituted to a considerable extent. *Montgomery:* Improving greatly.

NEW JERSEY.—*Warren:* Largely winter-killed, but improved finely till the middle of May, when it was attacked by the old-fashioned bug in the straw. *Gloucester:* Looks well where there is a stand, but many fields have failed of this, and are full of sorrel.

PENNSYLVANIA.—*Delaware:* Quite safe to predict an unprecedented yield. *Perry:* On low and thin soil, badly hurt by the winter, and now being badly injured by the fly. *Tioga:* Favorable weather has advanced the crop far beyond expectation. *Wyoming:* Most of that put in with the drill looks well; 33 per cent. of that put in with the harrow either poor or a total loss. *Beaver:* The crop will be a loss to a majority of the farmers, but to those who manured the ground and put in the wheat in good order, it will yield a profit. *Clinton:* Many fields which in ordinary seasons would have made nothing, now bid fair to produce an average crop. *Clearfield:* Badly winter-killed; but owing to the fine weather the loss will be less than was anticipated. *Monroe:* Looks fine. *Bedford:* Fields that seemed very bare recovered so as to indicate a good crop. *Bucks:* Improved from 75 to 90. *Butler:* About half a crop. *Lehigh:* Hessian fly in some localities. *Lycoming:* On sandy land has come on amazingly, but will be ten per cent.

below average. *Armstrong:* Many fields bare and spotted, but some are extra good. *Columbia:* Winter-killed; cannot be more than half a crop. *Indiana:* Improved greatly, the latter part of May, The season has demonstrated that drilled wheat stands the winter best. *York:* Indications of a more than average crop. *Crawford:* Winter-killed to some extent; that left doing well. *Washington:* Many spotted fields. *Northampton:* Looks well.

DELAWARE.—*Kent:* Prospect of a fine crop.

MARYLAND.—*Caroline:* Never looked so well before. *Baltimore:* Prospect of a fine crop. *Montgomery:* Looks unusually well. *Howard:* Growing weather has brought it up to a good average. *Talbot:* Fine. *Dorchester:* Looks remarkably well. *Harford:* Looking remarkably well; promise of the largest crop for years. *Queen Anne:* The crop will be heavy, should it escape rust and lodging.

VIRGINIA.—*King and Queen:* The prospect most favorable. *Loudoun:* Remarkably good; a week earlier than last year, and promises threefold more. *Patrick:* The best ever seen; promise of a larger crop than ever made before. *New Kent:* Looks remarkably well, even on poor land. *Culpeper:* Finest prospect for many years up to the 25th of April; since then it has been going back, and the prospect now is that the crop will be cut short 25 per cent.; attributed to the freeze the last of April. *Gloucester:* A little rust on the blade in exceptional cases, but a fair promise of a heavy crop. *Orange:* Unusually promising up to May 1st, when a frost injured it. *Carroll:* Exceedingly thrifty. *Halifax:* Luxuriant, and filling well. *Charlotte:* Looks remarkably well. *Fairfax:* A few backward fields somewhat injured by the fly, but the general prospect above average. *King George:* The early promise injured by the fly or some other insect. *Prince William:* The leaves spotted to some extent with rust. *Pulaski:* The stand rather thin, but a promise of a fine yield. *Richmond:* Has been most promising, but red rust has appeared. *Madison:* The fine promise injured by the cold spell the first of May, and by the fly; cannot be more than half a crop. *Middlesex:* Considerably damaged by the fly, and some appearance of rust. *Charles City:* Better than for ten years. *Clarke:* Seriously damaged by the Hessian fly, but promise of an average crop. *Floyd:* Very promising. *Wythe:* Never looked better. *Dinwiddie:* Considerable red rust on the blade, but the heads are filling well and the crop looking better than for five years. *Greenville:* Badly rusted in many places. *James City:* Some crops injured by the fly; others magnificent. *Elizabeth City:* More than an average yield is considered certain. *Lancaster:* Gave promise of a most abundant crop, but rust has made its appearance on the leaf, and may do material injury.

NORTH CAROLINA.—*Moore:* Damaged by a fly. *Transylvania:* Two or three weeks of dry weather will insure a liberal harvest. *Beaufort:* Very promising. *Gaston:* Highly promising until within ten days, since which rust has struck it on many farms. *Yancy:* Looks remarkably well. *Lincoln:* Great complaint of rust; also of ravages by an insect never before seen; it somewhat resembles the cabbage-louse. *Forsyth:* Never looked better. *Nash:* Rusted badly. *Duplin:* Very promising up to this week; now red rust is spreading rapidly. *Edgecomb:* The increase is 200 per cent. *Person:* Very fine; Fultz the great favorite. *Haywood:* The best promise for years at the first of May; considerably lessened by continuous wet through the month. *Stokes:* Rust has appeared on some of the most forward wheat. *Wilkes:* Looks fine, but red rust is appearing.

SOUTH CAROLINA.—*Chester:* Stalk and heads short, but well filled. *Lexington:* Some rust and mold, but fine crop—the best for years. *Clarendon:* Looks well, but some complaint of rust. *Laurens:* Some rust.

GEORGIA.—*Stewart:* A larger area and good crop, now being rapidly harvested. *Union:* Never so fine before; a large increase of acreage, and a promised yield greatly in excess of anything we have ever experienced. *Walker:* Being ruined by rust. *Walton:* Threatened with rust. *Carroll:* Injured by blade rust, causing the grain to shrink; also, by a fly boring into the joints. *Jefferson:* Good. *Henry:* The crop badly cut off by frost and red mold. *Rabun:* Very promising. *White:* Very promising. *Towns:* Very promising. *Dooly:* A fine prospect being injured by rust. *Gordon:* Red rust universal on the blade; none on the stalk. *Johnson:* Rust to some extent. *Gwinnett:* Rust will reduce the crop 33 per cent. *McDuffie:* Rust on the blade; none on the stalk; and the yield 10 to 20 per cent. greater than last year. *Butts:* Has suffered from red mold. *Madison:* Rust almost universal on stalk and leaf; some complaint of the fly. *Gilmer:* Looks well, but beginning to rust. *Heard:* Some red mold, but will be a fair crop. *Laurens:* Very good. *Troup:* A red mold on the blade but not on the stem; damage uncertain. *Whitfield:* Greatly injured by rust. *Cobb:* Very promising until two weeks ago, when the rust appeared. *DeKalb:* Badly rusted on the blade. *Lincoln:* Fine.

ALABAMA.—*Shelby:* Materially damaged by rust and recent storms, reducing it from 120 to 91. *Blount:* Generally affected with rust on the blade, none on the stock. *Crenshaw:* Some rust; being harvested. *Perry:* Injured by rust. *Randolph:* Rust on the blade and in some instances on the straw. *Jackson:* Damaged by rust. *Russell:* Rusted badly in some localities; all cut, and some are threshing. *Calhoun:* Being

harvested; black rust throughout the county, on low undrained land, caused almost a failure. *De Kalb:* Badly injured by rust. *Jefferson:* Promising up to May 1st, when the blade rust appeared which has injured the crop on low lands. *Landerdale:* Badly damaged by rust.

MISSISSIPPI.—*Grenada:* The rust is general, reducing the promise to half a crop. *Lowndes:* Much injured by rust. Wheat planted in clover-sod is very little affected by rust, and will make twice as much as on similar land without clover. *Neshoba:* Badly damaged by rust. *Choctaw:* Damaged by wet weather. *Kemper:* Now being harvested; generally injured by rust. From 1 bushel of the Tappahannock wheat, from the Department, saved in 1874, I supplied a few neighbors 25 bushels of seed, and seeded 12 acres; I, and all to whom I sold seed, have made very good crops. This is the only kind which has made a good crop in the county.

TEXAS.—*Bosque:* Damaged to some extent by the Hessian fly and red rust; but the area is so increased that the county will make as much as last year. *Llano:* Considerably damaged by the grasshopper, and a small fly or gnat. *Titus:* The outlook discouraging; 25 per cent. above an average sown, but the red rust struck in some weeks ago. The Jennings, from the Department, has no appearance of rust, but the Tappahannock rusted badly for the first time since introduced. *Bowie:* A partial failure, being full of rust. *Gillespie:* Lost by a freeze, 4 degrees below zero, April 12. *Wood:* Injured by rust, at least 20 per cent. *Palo Pinto:* Injured by rust. *Williamson:* Cut short by Hessian fly and rust. *Collin:* Rust on the blade, but not materially damaged. Some damage by the Hessian fly. *Panola:* Injured by late cold and rust. *Upshur:* Rust, since last February, has done some injury. *Bandera:* Materially injured by rust and drought. *Anderson:* A failure; affected by a yellow tinge, since the 1st of February; cause unknown. *Navarro:* Only half crop, but full and plump, and will weigh well. *Red River:* Rust. *Bexar:* Considerably damaged by rain in harvest. *Cooke:* Struck by rust April 15, when it stopped growing; will be half a crop. *Hunt:* Injured by rust. *Tyler:* A kind here called Aconauga, or California wheat, has now made the third crop, with no sign of rust. It is fine this year; will yield 25 bushels per acre on good land.

ARKANSAS.—*Marion:* Generally low and short-bladed. *Woodruff:* Some rust and smut. *Arkansas:* Some complaint of rust, but only on the blade. *Yell:* A little damaged by rust. *Bradley:* Badly injured by rust. *Craighead:* Quite short. *Saint Francis:* All late wheat greatly damaged by rust; not more than half a crop of winter wheat. *Baxter:* Thin, and heading out low; not over half a crop. *Crawford:* Expect enough for home use, which has not happened before last year since the rebellion. *Independence:* Injured by rust. *Izard:* Rust has appeared. *Prairie:* Injured by rust and birds. *Franklin:* Injured by dry weather, in May, and by rust on the blade. *Sebastian:* Increase of 10 per cent. in acreage, and never better. *Fulton:* A poor crop generally: thin, short, and slender stalk, light short head, and threatened with rust. *Howard:* So badly rusted that many farmers are pasturing it. *Benton:* Not good, owing to ravages of chinches and the Hessian fly.

TENNESSEE.—*Lewis:* Some rust, but only on the blades; prospect better than average for five years. *McNairy:* Badly damaged by rust. *Blount:* Generally promising, but rust on the blade. *Lincoln:* Recently seized by rust. *Loudon:* All damaged more or less, and some nearly ruined by rust. *Maury:* Rust, generally confined to the blade, but in some fields it has attacked the stalk. The fly has also done some damage. *Uniscoi:* Promises a good yield. *Gibson:* Much complaint of rust; late sowing thin. *Polk:* The yield considerably reduced by winter-killing, rust, and spot. Rust has nearly destroyed the blade, but has not affected the stalk. *Monroe:* Good so far, but badly rusted on the blade. *Rhea:* Better than for fifteen years. *Sullivan:* Very fine prospect for a heavy crop, though rust is appearing on some late-sown fields on low land. *Van Buren:* Drilled from the 1st to the 15th of October, never better; later, or sown broadcast, not so good. *Bedford:* Rust on the blade. *Sevier:* The finest prospect we ever had, but the red rust is now appearing on the blade. *De Kalb:* Rust, confined to the blade as yet. Fultz is the best, and is improving each year since its introduction. *Granger:* Very fine; only slight indications of rust on the blade. *Greene:* Very promising; some red rust on the blade. *Knox:* A much larger breadth was sown, with more care in the selection of seed, and more pains in the preparation of the ground; and consequently, up to within a few weeks the prospect has been unusually fine; since then, too much rain has covered the blades with rust, and the heads are not filling well. *James:* Never promised better, until May 20; since which I never saw rust come on so fast. *McMinn:* Damaged 10 to 15 per cent. by red rust and spot. *Bradley:* Promises an abundant yield. *Giles:* Never knew so large an acreage, but it is not up to last year's in quality; some rust and scab. *Fayette:* Very poor. *Lauderdale:* Injured by rust, smut, chess, and hailstorm. *Montgomery:* Acreage 67, but condition extra promising.

WEST VIRGINIA.—*Nicholas:* Very fine. *Putnam:* Promising. *Berkley:* Better than for five years. *Mercer:* More promising than last spring. *Greenbrier:* Unusually fine. *Wetzel:* Badly winter-killed on thin and wet land; where not, coming on finely. *Brax-*

ton: Promises above average. *Gilmer:* Some injured by frost, April 30th. *Upshur:* Looking fine. *Cabell:* Very much injured by freeze, May 1st, and since by drought. *Summers:* Very promising.

KENTUCKY.—*Bath:* Badly injured by the freezes in March and April. *Warren:* An early harvest and a fine crop. *Anderson:* Materially injured by drought. *Pendleton:* Suffering from drought. *Shelby:* The fields exceedingly spotted; cannot be over 75 per cent. of a crop. *Calloway:* A good yield is expected. *Hardin:* Thin, with short heads. *Owsley:* Injured by the freeze in March. *Simpson:* Not more than half it promised six weeks ago. *Bracken:* The Clawson wheat is a perfect success. *Russell:* The area increased 20 per cent., and 20 per cent. better stand; rust is making its appearance. *Spencer:* Very short straw and putting out small heads; drought. *Ballard:* Badly winter-killed, and damaged by rust, smut, and scab. *Galletin:* Injured by drought. *Jessamine:* One-third of the crop badly winter-killed. *Nicholas:* Thin, low, and short heads, owing to drought. *Todd:* Rust on the blade. *Carroll:* Reduced by drought. *Livingston:* Looks well.

OHIO.—*Miami:* About 25 per cent. was frozen out; that standing was never better. *Trumbull:* The prospect very poor. *Williams:* Badly frozen out; that left looks very well. *Adams:* Some fields look well, but many have been going back, owing to the fly and bug. *Tuscarawas:* Coming out much better than the spring indicated. *Vinton:* Never looked better the first of March, but, owing to cold and wet, many fields will not pay for cutting. *Crawford:* Almost a failure; frozen out. *Delaware:* Cannot be more than half a crop. *Pickaway:* Almost a failure; thousands of acres are being plowed up for corn. *Ross:* Fair prospect, though the freeze in March killed a great deal. *Huron:* Not over 25 per cent. of a crop. *Wood:* Badly frozen out. *Geauga:* Many pieces entirely winter-killed. *Lucas:* Badly killed on clay and undrained soils: upon loamy soils and tile, drained land, promises well. *Sandusky:* Winter-killed. *Seneca:* The poorest for ten years.

MICHIGAN.—*Muskegon:* Badly winter-killed on heavy lands; on light, above average. *Oakland:* The best for five years. *Kalamazoo:* Looks exceedingly well. *Calhoun:* Stands well. *Lake:* The Clawson wheat a decided success; the yield large, and the straw long and stout. *Ottawa:* Badly frozen, but doing first-rate now. *Shiawassee:* Coming forward very rapidly. *Van Buren:* Somewhat spotted from winter-killing. *Wexford:* Nearly ruined by winter-killing, and much of it plowed up. *Mason:* Looks very fine. *Saint Joseph:* Shorter at heading than common.

INDIANA.—*Kosciusko:* On prairie and hilly land, never looked better; on low clay land, very poor. *Noble:* Injured in the winter; some fields not worth cutting. *Putnam:* All but ruined in the winter; many fields plowed up. *Washington:* On ground well prepared and dressed, fine; on poor ground, very light, not more than 50 per cent. of the usual acreage sown. *Franklin:* Badly frozen out. *Howard:* Depreciated 50 per cent. in the winter. *Dearborn:* Almost entirely winter-killed. *Hamilton:* A very short crop sown, and much of that not worth cutting; winter-killed. *Huntington:* A poor yield; winter-killed; much plowed up. *Johnson:* Nearly half sown in the fall plowed up; that left will not average over 7 bushels per acre. *Wabash:* Suffered in the winter; much plowed up. *Warrick:* Suffered from the extremely dry spring. *Carroll:* A portion of the land soon plowed up. *Dubois:* Injured by drought in May; heads very short. *Gibson:* Heading very low, and thin on the ground. *Switzerland:* Winter-killed; 35 per cent. below average. *Madison:* Half crop.

ILLINOIS.—*Bureau:* Considerable destroyed by freezes. *Gallatin:* Looks well. *Clinton:* Badly winter-killed. *Effingham:* Not more than 25 per cent. of a crop, owing to the March freeze. *Fayette:* Not more than half a crop. *Jersey:* Appearances indicate a large crop. *Madison:* Good heads, but thin and mixed with chess. *Mason:* Looks well. *Jefferson:* Full heads, but rather thin. *Montgomery:* Much better than expected in many localities; in others, plowed up. *Perry:* Badly winter-killed. *Williamson:* Injured by the hard freeze in March. *McLean:* Never better.

WISCONSIN.—*Barron:* Looks well. *Pierce:* Nearly all killed. *Waupaca:* Badly winter-killed. *Walworth:* Seriously injured by freezing. *Iowa:* Has improved the last three weeks very much.

MINNESOTA.—*Isanti:* The Arnautka wheat from the Department is well suited to this climate. It is spread all over the county, and is eagerly sought for. *Sherburne:* A total failure.

MISSOURI.—*Douglas:* Owing to the dry weather last fall, less than half the usual quantity was sown. That came up indifferently, and the Hessian fly has destroyed full half of it. *Jasper:* Never more promising. *Laclede:* Small acreage, but promises well. *Montgomery:* Suffering for rain. *Platte:* Never better prospect for an abundant crop. *Stone:* Materially damaged by the fly, and the rust has appeared. *McDonald:* Injured by rust. *Vernon:* Prospect of a heavy crop. *Christian:* Very indifferent. *Lincoln:* Ripening early. *Perry:* Scarcely half of last year's crop. *Pettis:* Splendid. *Saint Francis:* Only half the amount intended put in in the fall, owing to continued dry weather. Those who did sow have a fine prospect. Some who sowed in January have as fine prospect as those who sowed in the fall. *Shelby:* The little sown looks

well. *Boone:* About 25 per cent. of an average crop growing, and that looks first rate, but chinch-bugs are in it. *Maries:* Not over 50 per cent. average acreage; good on all dry land. *Chariton:* Prospect of a good yield. *Johnson:* Very heavy straw; inclined to rust. *Mississippi:* Very promising till within 10 days; the rust has killed the blade, but not yet touched the stem. *Barton:* Never better. *Jefferson:* Does not look well. *Phelps:* Damaged by the Hessian fly. *Dallas:* Injured by the fly. *Reynolds:* At least 67 per cent. rusted very badly. *Wright:* Injured by the fly; not over 25 per cent. of a crop.

KANSAS.—*Reno:* Late sown, badly injured by rust. *Barbour:* Small acreage; looks promising. *Doniphan:* Extraordinary promise. *Butler:* Good beyond precedent. *Cherokee:* Prospect never better. *Douglas:* Some appearances of rust. *Ellis:* Owing to drought, did not come up till spring; looking well. *Jackson:* Prospect of the largest crop ever grown. *Labette:* Scarcely ever more promising, though there is much rust on the blade. *Lyon:* Rusting. *Montgomery:* Promises a very large yield; 40,000 acres sown last fall. *Wyandotte:* Looking fine. *Chase:* Reduced by late sowing, heavy rains, hail-storms, rust, and joint-worms; but improving greatly the past week. *Shawnee:* A fine promise reduced by rust to half a crop. *Cherokee:* The finest prospect ever known.

CALIFORNIA.—*Contra Costa:* Early sown, excellent; late, suffering from dry weather. *San Joaquin:* The prospect very flattering, except on the heavy black land near Stockton. *Sutter:* Never looked better. *Butte:* All that could be desired. *Placer:* The promise of the crop is superior to any for a number of years.

OREGON.—*Clackamas:* Never better. *Columbia:* Looks splendid, but not over half as much as last year.

UTAH.—*San Pete:* Looks first rate.

DAKOTA.—*Buffalo:* Suffering from dry weather.

SPRING WHEAT.

Acreage.—The States reporting a decrease of acreage, compared with the previous crop, are Vermont, 6 per cent.; New York, 13; Kentucky, 15; Illinois, 12; Wisconsin, 5; Iowa, 11; Kansas, 4; and Oregon, 3. The States reporting an increase are Pennsylvania and Nebraska, 4 per cent.; Texas (which reported an increase of 21 per cent. last year) and Ohio, 16; Arkansas, 7; Michigan, 5; Indiana and Minnesota, 10; Missouri, 12; and California, 6. In the latter State, there being no distinct dividing-line between winter and spring wheat, the variations in acreage are affected by a somewhat capricious classification. The returns indicate about the same acreage as last year.

Condition.—Among the Eastern and Middle States the condition is lowest in New York, being 94; it is 100 in Maine, Connecticut, and Pennsylvania. In the Northwest, while it is 1 per cent. above in Wisconsin and Minnesota, it falls 3 per cent. below in Iowa. The reduction is ascribed mainly to drought, though ravages of grasshoppers are specified in one county. Missouri falls 8 per cent. below; Kansas rises to 98, and Nebraska to 100.

MAINE.—*Piscataquis:* Increased acreage. *York:* Has come up finely. *Androscoggin:* Barely up. *Oxford:* Fair, though late.

NEW HAMPSHIRE.—*Rockingham:* Doing well.

NEW YORK.—*Albany:* Very backward.

GEORGIA.—*Rabun:* Very promising. *Hart:* Increased acreage and good crop, though affected with rust in localities.

TEXAS: *Burleson:* Much injured by drought. *Gillespie:* Badly injured by drought and grasshoppers. *Williamson:* Cut short by Hessian fly and rust.

TENNESSEE.—*Monroe:* Badly rusted on the blade—red rust.

OHIO.—*Delaware:* Increased acreage and fine prospect. *Wood:* Increased acreage, promising a good yield. *Geauga:* Increased acreage, coming forward with rapidity.

MICHIGAN.—*Oakland:* The best for five years. *Mason:* Looks very fine.

ILLINOIS.—*Mason:* Looks well. *Ogle:* Less acreage, but promising. *Mercer:* Quite thin. *McLean:* Thin.

WISCONSIN.—*Sheboygan:* Backward.

MINNESOTA.—*Chippewa:* If no calamity occurs, the crop in Western Minnesota will be enormous. *Fillmore:* The dry and hot weather, for the last ten days, has given the crop a bad look.

IOWA.—*Shelby:* Suffering for want of rain, and from young grasshoppers in some

localities. *Hardin:* Late sown, but favorable weather is bringing it forward rapidly. *Cherokee:* Looking well. *Howard:* Early sown, very promising. *Madison:* Not doing well, owing to extreme dry weather following wet. *Tama:* Very thin.

KANSAS.—*Doniphan:* Sown too late, and injured by heavy rains.

OREGON.—*Clackamas:* Much more sown than usual, but, owing to continual late rains, does not look well.

UTAH.—*Kane:* Injured by cold winds and a heavy frost. *San Pete:* Much injured by late frosts.

DAKOTA.—*Darison:* Looking well.

WASHINGTON.—*Thurston:* Coming on very finely. *Whitman:* A large increase in acreage.

COTTON.

The June returns indicate a slight reduction of area in cotton, comparatively late planting, good stands except in cases of too early planting or inundation, growth not up to the average for the season, healthy and improving condition, and clean culture, with the exceptions caused by heavy rains, that stimulate growth and prevent working. The largest local reduction in area has been in Louisiana, caused by the overflow and wet weather in the planting season. The next largest is in Tennessee, where the season has been cold and wet. In certain districts in Texas there has been an effort to substitute corn for cotton, but in one-fourth of the counties there has been a positive increase, and in nearly half the remainder no decrease, while the enlargement of the total area of arable crops is rapidly increasing. The figures for acreage are as follows: North Carolina, 98; South Carolina, 99; Georgia, 94; Florida, 89; Alabama, 100; Mississippi, 98; Louisiana, 89; Texas, 100; Arkansas, 100; Tennessee, 95. The reduction in the entire area is about three per cent. In Virginia and North Carolina there is some complaint of bad stands and small growth from cold nights, though the plants are healthy, and the culture generally clean. The late planting promises well in South Carolina. Early seeding has been productive of poor stands. The condition averages very high in Georgia, owing to seasonable rains, fine weather for work, and abundant labor. Drought at the time of planting has affected the crop unfavorably in Florida. Stands are generally good in Mississippi and Alabama, and the plants healthy though small. In Louisiana overflows have seriously injured the crop in exposed locations. Droughts in some parts of Texas have been injurious. The plant is looking well in Arkansas and Tennessee, except in places where it was injured by incessant rains or inundations.

The condition of the several States is as follows: North Carolina, 101; South Carolina, 98; Georgia, 103; Florida, 82; Alabama, 94; Mississippi, 92; Louisiana, 89; Texas, 90; Arkansas, 95, and Tennessee, 93.

The average condition of the cotton-crop on the first day of June of the present year, and six years next preceding, is shown in the following table:

States.	1876.	1875.	1874.	1873.	1872.	1871.	1870.
North Carolina	101	92	89	85	96	90	94
South Carolina	98	97	81	88	92	92	96
Georgia	103	91	80	94	94	82	101
Florida	82	94	90	98	95	103	98
Alabama	94	101	82	93	105	83	102
Mississippi	92	100	78	92	100	84	95
Louisiana	89	95	70	94	104	90	101
Texas	90	96	98	86	100	93	97
Arkansas	95	90	75	92	98	83	101
Tennessee	93	99	90	90	99	90	85

An analysis of these figures shows that the condition of the crop is nearly but not quite so favorable as on the 1st day of June, 1875; the June average of 1876 is also less than in 1872 and 1870, but greater than in 1874, 1873, and 1871. The opening prospect for the growing crop is, then, at least a full average with late years, but its character and productiveness depend upon the subsequent developments of the season and the culture bestowed upon it.

The following notes from our statistical correspondence will illustrate the local aspects of the crop in different parts of the cotton area :

NORTH CAROLINA.—*Laurens:* Suffering from cold nights. *Union:* Plant small; stand very good. *Edgefield:* Good stand, healthy-looking. *Orange:* Prospect good. *Pamlico:* Looking remarkably well. *Alamance:* Came up well, good stand. *Duplin:* Diminished acreage; stand unusually good; growing finely. *Edgecombe:* Late planting is not up yet; early planting, fine. *Pitt:* Stand good, free from grass. *Wilson:* Some complaint of cotton dying. *Cumberland:* Fifteen days behind average season; rather inferior stand. *Columbus:* Owing to cool nights, stand is bad. *Beaufort:* Plant small, but stand good and healthy. *Gaston:* Acreage same as last year; good stand.

SOUTH CAROLINA.—*Fairfield:* Looks well, and has a very good stand. *Williamsburgh:* Very promising. *Orangeburgh:* Looks well, but is backward. *Marlborough:* Condition fine; stand perfect; slight injury from lice. *Lexington:* Somewhat backward. *Chester:* First planting, bad stand and unhealthy; later planting, good stand, healthy, and promising. *Newberry:* Stand generally good. *Clarendon:* Increased acreage; very promising. *Georgetown:* Good stand; plant small, but promising.

GEORGIA.—*Worth:* Plant is small, but looks well. *Richmond:* Good stand; seldom such regularity. *Schley:* In good condition. *Gordon:* Inferior stand and feeble weed. *Wilcox:* Plant small. *Terrell:* In good condition. *Butts:* Stand good; plant never looked better. *Troup:* Excellent. *Laurens:* Never better. *Hart:* Better than for many years. *Dodge:* Good prospect. *Cobb:* Fine. *Walton:* Stand good; season favorable. *Stewart:* Average stand; complaint of grass. *Montgomery:* Good stand; free from rust. *McIntosh:* Plant small, but healthy. *Lincoln:* Good stand, but rather backward. *De Kalb:* Stand good; backward, but average prospect. *Carroll:* In fine condition. *Clayton:* Very fine.

FLORIDA.—*Columbia:* Looking well, but bad stand. *Gadsden:* Bad weather and cut-worms have caused a defective stand. *Madison:* Late, on account of backward spring. *Jackson:* Stand good; plant late.

ALABAMA.—*Greene:* Stand above average. *Dale:* Best stand ever known, and looks very healthy. *Russell:* Stand remarkably good. *Hale:* Stand not very good; grassy, owing to excessive rains. Crop two weeks late. *Lee:* Heavy rains have caused rank growth of grass. *Jefferson:* Too much rain and grass. *Franklin:* Acreage very great; condition satisfactory. *De Kalb:* Came up well, but has suffered from bad weather and insect injuries. *Colbert:* Growing well. *Autauga:* Looking well. *Dallas:* Increased acreage; condition not so good, owing to imperfect stands. *Conecuh:* Stand never better; increased acreage. *Calhoun:* Doing well; excellent stand. *Lauderdale:* Plant remarkably small; stand inferior. *Monroe:* Unusually late. *Macon:* Cotton-lands too wet this season. *Blount:* Diminished acreage; later than usual. *Morgan:* Some complaint of imperfect stand. *Perry:* Increased acreage; prospect good. *Randolph:* Generally clean, but small.

MISSISSIPPI.—*Greenville:* The overflow has materially injured the cotton-crop in part of the county. *Choctaw:* Not more than 75 per cent. of last year's acreage; on account of damaged seed, a great many have plowed up and planted corn. *Jefferson:* A good stand, but grassy. *Perry:* Mostly planted late; appearance fair. *Coahoma:* An inclination to procure improved cotton-seed. *Covington:* Not doing well. *Clark:* A very bad stand of cotton, and an excessive stand of grass. *De Soto:* Late, but a good stand, and in good condition. *Lincoln:* The stand defective on account of cold and wet. *Neshoba:* In some instances the stand is bad, and the crop late, and looking unhealthy. *Rankin:* Much complaint of poor stand; late and sickly. *Grenada:* Did not start well; but the stand is generally good, and the weather now favorable. *Pike:* Looks well, although backward, on account of rains and cold weather.

LOUISIANA.—*Carroll:* The plant is finer than for years; the stand is perfect, but generally grassy. *Jackson:* Backward, but improving. *Concordia:* Decrease of 30 per cent. in acreage on account of the overflow; under the most favorable circumstances, 35 per cent. of the area planted will not average one-third of a crop. *East Baton Rouge:* Had to be plowed up and planted over on account of the extreme cold on the 19th and 20th of March. *Rapides:* About 15 days behind last year; good stand generally. *Franklin:* Late and very small; large percentage under water. *Richland:* Four or five weeks later than usual; the stand not good, owing to heavy rains and cold nights.

TEXAS.—*Washington:* Increased acreage; looking very well. *San Jasinto:* Prospect

good. *Titus:* Increased acreage, but not more than a two-thirds crop planted. *Robertson:* Ten per cent. not up. *Burleson:* Stand not good; many fields have altogether failed to come up. *Collin:* Very good. *Panola:* Fine stand; rather late. *Polk:* Late, owing to late, wet spring. *Lavaca:* Vigorous growth; good stand. *Waller:* Crop this year better than last. *Navarro:* Stand good. *Nacogdoches:* Good stand; looking fine. *Matagorda:* Stand scattering; 50 per cent. not up yet. *Fort Bend:* About half stand, and this dying from want of moisture. *Cherokee:* The teachings of the Grange have been carried out in the reduction of cotton and increase of cereals. *Austin:* Less cotton, more corn planted. *Fayette:* Drought has injured the crop. *Bandera:* Little planted, and that little has not sprouted; cause, drought. *Bell:* Good stand. *Colorado:* Good, but late; acreage 15 to 20 per cent. above last year. *Gonzales:* Doing well. *Hays:* Prospect good. *Kendall:* Prospect for heavy yield. *Williamson:* Late; one-half just coming up.

ARKANSAS.—*Franklin:* Small for the time of the year. *Scott:* Prospect very flattering. *Fulton:* Stand generally good, clean, and well worked. *Crawford:* Late, but looks well. *Dallas:* The weather has been favorable for cleaning, and the stand is very good. *Izard:* Stand is very good. *Ouachita:* About two weeks late; the stand is good, and the plants look well, but very grassy. *Woodruff:* Scarcity of labor and low prices have caused a reduction of 10 per cent. in acreage. *Bradley:* Good stand, and looks healthy. *Craighead:* Stand and condition generally good, but backward.

TENNESSEE.—*Lauderdale:* The outlook for the crop is 25 per cent. better than last year, and more planted. *Rutherford:* Very promising; the stand good and growing finely. *Gibson:* Late planted, but the stand excellent.

OATS.

Acreage.—The entire acreage is slightly increased over that of last year. States indicating the largest absolute increase are Wisconsin, and California, 102; Minnesota, 109; Iowa, 101; Nebraska, 103. A very large relative increase is reported in the Southern States: in Texas, 57 per cent.; Georgia, 30; South Carolina, 12; Louisiana, 7. A decrease of 3 per cent. is indicated in New York, 4 in Illinois and Tennessee, 2 in Kentucky, Indiana, and Missouri, 1 in Iowa, Kansas, New Hampshire, Vermont, and Connecticut.

Condition.—In New England the range is from 100 to 110. In the Middle States, Pennsylvania is average; New York, 3 per cent. and New Jersey 1 per cent. below. Michigan is 100. The States west of the Mississippi range from 100 to 103, except Arkansas, 89; Missouri, 99, and Oregon, 92. In West Virginia and the Ohio Valley the general condition is about average, except in Kentucky, where an extensive drought has reduced it 15 per cent. below. On the South Atlantic coast, Delaware and Maryland report 8 per cent. below; Virginia, 7; and North Carolina, 5. In the two latter States late spring frosts and subsequent dry weather are assigned as the principal causes. South Carolina is 12 and Georgia 10 per cent. above. In these States both winter and spring oats, with few local exceptions, appear to have matured in good condition. Rust, almost universal on the wheat, affected this crop but slightly. It did more injury in Alabama, reducing the condition 2 per cent. below. In Texas the largely increased acreage is very nearly average in condition. The harvest was going on at the time of reporting, and the indicated average yield was fully 40 bushels per acre.

MAINE.—*Waldo:* Early-sown are looking fine. *York:* Have come up finely.

CONNECTICUT.—*New London:* Very good.

NEW YORK.—*Albany:* Very backward. *Genesee:* Doing finely.

NEW JERSEY.—*Warren:* Look extremely well.

PENNSYLVANIA.—*Perry:* Short, owing to the cold spring, but enough on the ground. *Beaver:* A dry and cold April hurt the oats badly. *Bucks:* Very promising. *Lycoming:* Promising. *McKean:* Very late. *York:* Indications of a more than average crop. *Washington:* Have made a very fine start. *Northampton:* Look well, and are growing finely.

DELAWARE.—*Kent:* Injured by the cold spring.

MARYLAND.—*Baltimore:* Recruited much by the late rains. *Howard:* Will be light.

VIRGINIA.—*Fluvanna:* Very bad on high grounds; doing well on low; spring oats a failure. *New Kent:* Spring oats look bad; winter, very good. *Orange:* Very backward, and the prevailing dry weather exceedingly unfavorable to the crop. *Page:* Unpromising. *Halifax:* Early-sown spring oats badly killed by frost. *Charlotte:* Those not killed by late frosts look remarkably well. *King George:* Low, but time yet for a good growth. *Prince William:* Stands thin. *Pulaski:* Backward. *Madison:* Promising. *Middlesex:* Never better. *Floyd:* Very promising. *Augusta:* Short and backward. *Dinwiddie:* Spring oats did not come up well, and are looking badly. The winter oat is becoming very popular. Seeded in September or the first of October, it is almost a sure crop, and the yield much larger than of spring oats. The crop seeded last fall is looking very fine. *James City:* Fall oats are No. 1; spring, all killed. *Prince George:* The poorest crop for years. The Schonen oats by far the best. *Northampton:* The crop seriously damaged by cold dry weather. The fly also made its appearance in the latter part of May, and so damaged the crop that many fields will not be harvested. *King and Queen:* Very backward, and looking decidedly poor.

NORTH CAROLINA.—*Beaufort:* Will be short, owing to dry weather the last three weeks. *Caswell:* Spring oats injured by frosts; will not yield half a crop; winter oats more promising. *Nash:* Suffering for want of rain. *Person:* Spring oats killed by a late freeze; winter oats, about half the crop looking fine. *Haywood:* Looking very fine. *Pamlico:* Injured by drought.

SOUTH CAROLINA.—*Edgefield:* Injured by drought. *Clarendon:* A largely increased acreage now ready for the sickle. *Richland:* Large and very fine crop. *Lawrence:* Better than usual, especially the red-rust-proof.

GEORGIA.—*White:* The poorest ever seen. *Dooly:* The finest crop ever known. *Wayne:* Very inferior, owing to drought in winter and spring. Most of the crop is housed. *Gwinnett:* Unusually fine, both fall and spring oats. *Randolph:* Look fine, but there is much smut. *Worth:* Finer than known in twenty years. *McDuffie:* Will make nearly double made in any year since the war. The fall oats are all ready to cut, and no sign of rust on the spring oats. *Wilcox:* Injured by dry weather, but the acreage 30 per cent. larger than last year. *Butts:* Never better. *Madison:* Many farmers have changed the sowing of oats from spring to fall, which accounts for the fact that the figures for both acreage and condition are 150. *Laurens:* Very good. *Spalding:* All agree that such a prospect was never before known. *Troup:* Fall oats never better; sown early in the spring, very good; late, a total failure from rust. *Cobb:* Both winter and spring oats very promising. *Lincoln:* Fine. *Walton:* Unusually promising, and the season favorable. *Carroll:* Never better, both fall and spring. *Jefferson:* Rather dry for oats, but more than in any year since the war.

FLORIDA.—*Madison:* Those properly put in and manured, fine; the remainder injured by drought. *Gadsden:* Very superior.

ALABAMA.—*Dale:* Half the crop ruined by rust; the other half very good. *Greene:* Look fine. *Blount:* Fall oats, fine; spring oats rather backward. *Crenshaw:* Rusted in some localities. *Perry:* The best crop in ten years. *Randolph:* Look fine. *Calhoun:* Very fine; now being harvested. *Conecuh:* Ripening fast, and harvesting going on. *De Kalb:* Looking well. *Butler:* Seriously injured by rust. *Barbour:* Spring oats almost invariably rusted; considerable rust on oats heretofore considered rust-proof.

MISSISSIPPI.—*Amite:* The crop is made, and is very good. The red oat is being generally cultivated. *Perry:* Blighted by rust; not over half a crop. *Covington:* Late oats nearly ruined by rust. *Choctaw:* Three-fourths of a crop.

LOUISIANA.—*Claiborne:* Being injured by rains and rust. Red-rust-proof oats are doing well.

TEXAS.—*Burleson:* Spring oats much injured by drought. *Gonzales:* The largest acreage ever sown, and yields forty bushels per acre; about harvested. *Williamson:* Very good, will average forty-five bushels per acre. *Upshur:* Better than last year. The Holstein oats from the Department are superior to any other in this vicinity. *Red River:* Very good. *Bexar:* Considerably damaged by rain in harvest. *Cooke:* Very fine. *Victoria:* Harvested; average forty bushels per acre. *Tyler:* The red-rust-proof are fine; will yield thirty to fifty bushels per acre.

ARKANSAS.—*Bradley:* Badly injured by rust. *Independence:* Much improved by recent rains. *Arkansas:* Backward, but good. *Marion:* So short that they will have to come out considerably before they can be cut. *Franklin:* Injured by dry weather in May. *Cross:* Have suffered from dry weather. *Scott:* Prospect very flattering. *Howard:* Almost ruined by rust.

TENNESSEE.—*Lewis:* Prospect very flattering. *Williamson:* Less sown every year; seriously damaged by dry weather in April. *Blount:* Damaged by late frosts. *Unicoi:* Frozen out badly in March. *Monroe:* Both winter and spring oats were never better. *Rhea:* Better than for fifteen years. *Sullivan:* Killed out badly by the late freeze. The winter-oat is gaining favor every year. *Sevier:* Never so good. *Grainger:* Some were killed by the freeze, but in the main they look well. *Greene:* Fall sown, splendid; spring sown, not promising. *James:* An increase of 20 per cent. in acreage, and never looked better. *Bradley:* Very fine. *Fayette:* Very good.

WEST VIRGINIA.—*Marion:* Doing well. *Nicholas:* Look well. *Mercer:* Late. *Cabell:* Have suffered much by drought. *Doddridge:* Somewhat injured by drought. *Summers:* Promising. *Randolph:* Badly injured by frost May 1, but recuperating.

KENTUCKY.—*Anderson:* Materially injured by drought. *Oldham:* Have suffered for want of rain. *Pendleton:* Will amount to but little, owing to drought. *Owsley:* Badly injured by the freeze in March. *Spencer:* Not over 50 per cent. of a crop, owing to drought. *Gallatin:* Badly injured by drought. *Nicholas:* Will be almost a failure, owing to drought. *Henry:* Almost ruined for want of rains. *Carroll:* Reduced by drought. *Owen:* Lessened 10 per cent. by drought.

OHIO.—*Preble:* Have made a very rapid growth. *Williams:* Look well. *Morrow:* Late in starting, but look promising. *Crawford:* Prospect good. *Delaware:* Large acreage and good stand. *Portage:* Very fine. *Wood:* The best ever seen, but acreage decreased. *Meigs:* Fine.

MICHIGAN.—*Shiawassee:* Backward, but promising. *Van Buren:* The season favorable for oats. *Mason:* Look very fine. *Saint Joseph:* Have a very fine start.

INDIANA.—*Kosciusko:* Never better. *Noble:* Never much better. *Franklin:* Short and unthrifty. *Howard:* Look well. *Crawford:* Suffering for want of rain. *Dearborn:* A severe drought through the whole month of May has seriously damaged the crop. *Warrick:* Suffered much from the dry spring. *Switzerland:* Good.

ILLINOIS.—*Macoupin:* Will be short. *Woodford:* Indications of a fine crop. *Gallatin:* Look well. *Clinton:* Too much rain for oats. *Fayette:* Look well, but small acreage. *Ogle:* Favorable appearance. *Jefferson:* Splendid. *Mercer:* Quite thin.

WISCONSIN.—*Sheboygan:* Backward.

MINNESOTA.—*Fillmore:* Suffering from dry and hot weather for the last ten days.

IOWA.—*Marion:* Coming forward finely. *Howard:* Early sown very promising. *Madison:* Not doing well, owing to extreme dry weather, following wet.

MISSOURI.—*Montgomery:* Suffering for rain. *Platte:* The season too wet for oats. *Pettis:* Very flattering. *Saint Francis:* Fine. *Maries:* Have suffered on wet land. *Oberton:* Very fine. *Reynolds:* Very fine.

KANSAS.—*Cowley:* Increased acreage; looking well. *Reno:* Splendid. *Barbour:* Late, but doing well. *Cherokee:* Few sown, but look fine. *Lyon:* Rusting. *Cherokee:* Acreage decreased 50 per cent. from cold, wet, backward spring.

NEBRASKA.—*Furnas:* The reduced condition (90) occasioned by damaged seed.

CALIFORNIA.—*Butte:* All that could be desired.

DAKOTA.—*Davison:* Look well. *Buffalo:* Suffering from dry weather.

RYE.

The condition of winter-rye corresponds very nearly with that of winter-wheat, except that it suffered less from winter-killing. The returns for condition from States producing 250,000 bushels or more, average, Connecticut, 96; New York, 87; New Jersey, 91; Pennsylvania, 92; Maryland and Virginia, 102; North Carolina, 101; West Virginia, 103; Kentucky, 95; Ohio, 76; Indiana, 86; Illinois, 91; Wisconsin, 93; Iowa, 74; Missouri, 95.

MAINE.—*Androscoggin:* Looking well.

NEW YORK.—*Albany:* Very spotted: rye sown with a drill and receiving proper treatment otherwise, looks well. *Schoharie:* Badly winter-killed; not half a crop. *Orange:* Injured by winter-killing.

NEW JERSEY.—*Warren:* Thinish on the ground, but looks well.

PENNSYLVANIA.—*Northampton:* Looks better than last year.

MARYLAND.—*Caroline:* Does not look as well as usual. *Baltimore:* Has a fine appearance. *Howard:* Badly winter-killed. *Dorchester:* Looks remarkably well.

VIRGINIA.—*Patrick:* Not so good as wheat, but 120. *Dinwiddie:* Very luxuriant.

GEORGIA.—*Rabun:* Never better.

TEXAS.—*Titus:* Will be reduced by rust to half a crop.

ARKANSAS.—*Arkansas:* Very tall and good all over the county. *Franklin:* Injured by dry weather in May.

TENNESSEE.—*Williamson:* More sown than last year, and looks well. *McNairy:* Badly damaged by rust. *Uniscoi:* Promises a good yield. *Rhea:* Better than for fifteen years.

WEST VIRGINIA.—*Nicholas:* Looks well. *Mercer:* More promising than last spring.

KENTUCKY.—*Pendleton:* Suffering from drought. *Spencer:* Very short straw and putting out small heads; drought. *Gallatin:* Injured by drought.

OHIO.—*Vinton:* Never looked better. *Crawford:* almost a failure; frozen out.

INDIANA.—*Howard:* Depreciated 50 per cent. in the winter. *Switzerland:* Winter-killed; 35 per cent. below average.

ILLINOIS.—*Bureau:* Injured by the freezes. *Ogle:* Promising.
WISCONSIN.—*Baron:* Looks well. *Waupaca:* Badly winter-killed. *Walworth:* Seriously injured by freezing.
IOWA.—*Cherokee:* Killed in the winter so as to make it thin.
MISSOURI.—*Platte:* Looking well. *Vernon:* Some early-sown winter-rye has been found covered with chinch-bugs, and plowed under; but there is less complaint from this cause than for many years. *Chariton:* Prospect of a good yield.
KANSAS.—*Jackson:* Prospect of the largest crop ever grown. *Labette:* Looks fine, with plenty of straw. *Shawnee:* Looks splendid.
CALIFORNIA.—*San Joaquin:* For the first time in many years considerable attention has peen paid to raising rye, and the prospect is good.

BARLEY.

Acreage.—The entire acreage of spring-barley has been increased nearly 3 per cent. over that of last year. The States reporting a decrease are Tennessee, 2 per cent.; Kentucky, 8; Ohio, Indiana, and Iowa, 5; Illinois, 3. The States returning the largest absolute increase are New York, 4 per cent.; Michigan, 6; Wisconsin, 9; Minnesota and Kansas, 17; Missouri, 6; California, 7. Texas, which in 1875 increased its acreage 5 per cent. over the previous year, has advanced that 13 per cent. An increase of 7 per cent. is reported in Vermont and of 12 in Massachusetts.

Condition.—The general condition of spring-barley in New England is good. It is average in Michigan, 1 per cent. above in Minnesota, and 7 per cent. above in California. In the other States in which barley is an important crop it falls below: New York and Iowa, 4 per cent.; Pennsylvania, 2; Kentucky, owing to drought and late freezes, 19; Indiana, 12; Illinois, 3; Wisconsin, 1.

Winter-barley.—Except in Missouri, 92, the condition of winter-barley is above average in all the States producing it west of the Mississippi: Arkansas, 11 per cent.; Kansas, 3; Nebraska, 25; California, 4. Georgia reports 11 per cent. above, Texas 1 per cent. below.

NEW YORK.—*Albany:* Very backward. *Genesee:* Came up well and is doing finely
TEXAS.—*Colin:* Harvested; some crops thrashed over 100 bushels per acre. *Cooke:* Winter-barley very fine.
TENNESSEE.—*Rhea:* Better than for fifteen years.
KENTUCKY.—*Jasamine:* A third of the crop badly winter-killed.
OHIO.—*Preble:* Has made a very rapid growth.
INDIANA.—*Franklin:* Badly frozen out. *Switzerland:* Almost a failure; winter-killed. *Dearborn:* A severe drought through May seriously damaged the crop.
ILLINOIS.—*Ogle:* Fair prospect.
WISCONSIN.—*Sheboygan:* Backward.
MINNESOTA.—*Fillmore:* The dry and hot weather for the last ten days has given the crop a bad look.
IOWA.—*Marion:* Late grown but coming forward finely. *Howard:* Mostly sown late, which was a great mistake, as the drought and heat have thinned the crop.
MISSOURI.—*Chariton:* Very fine.
KANSAS.—*Labette:* Growing off rapidly.
CALIFORNIA.—*Contra Costa:* Early sown, excellent; late, suffering from dry weather. *Santa Clara:* Early-sown looks well; late will not yield more than half a crop. *San Joaquin:* The prospect very flattering, except on the heavy black land near Stockton. *Stanislaus:* Has filled better than wheat. *Sutter:* Never looked better. *Butte:* All that could be desired. *Placer:* Better than for years.
NEW MEXICO.—*Mora:* Doing well.

CLOVER.

Acreage.—In the Eastern and Middle States, taken as a whole, the area of clover remains about stationary; New York and Pennsylvania indicate no change, and the slight variations of decrease and increase in the other States about counterbalance one another. In Maryland, a

decrease of 1 per cent. is ascribed to a scarcity of seed; in Wisconsin, 12 per cent. to winter-killing. The area is diminished 1 per cent. in Minnesota, and remains unchanged in Indiana. All the remaining States indicate an increase varying from 1 to 28 per cent. The rate last named is reported from Nebraska. Other States returning a high rate of increase are Mississippi and Kentucky, 23 per cent.; California, mainly, if not exclusively, in alfalfa, 20; Kansas, 13; Texas, 9; Tennessee, 8; Delaware and Alabama, 7; Michigan, 6; Arkansas, Missouri, and Ohio, 5; Virginia and North Carolina, 4.

Condition.—Among the States north of the Potomac and east of the Ohio, Maine reports an average condition of 102; Massachusetts, 104; Rhode Island and Delaware, 105; the remainder range from 99 in Pennsylvania to 88 in New Jersey. The reduction in the latter was caused mainly by last year's drought. New York is 4 per cent. below. The drought in Kentucky has reduced the condition to 98. Wisconsin is 93, and Minnesota 95. The condition is average in Indiana and Oregon, and above in all the remaining States. The highest is in Tennessee, 112; West Virginia, 109; Missouri, 107; Texas, 106; Nebraska, 104.

PASTURES.

The favorable condition of spring-pastures, throughout the entire country, has rarely been equaled, and was probably never excelled. Returns from Vermont make the average 96; but as the reduction is owing mainly to backwardness, resulting from the very late spring, it signifies a good condition in reserve rather than a positively defective one. Owing to the effects of a severe drought last season it falls 1 per cent. below in New Jersey; and, owing to a drought prevailing in May, it is 3 per cent. below in Kentucky. Florida and Louisiana also report an average of 3 per cent. below, the reduction being confined to a few counties, while a large majority are 100 or above. In all the other States, in all sections, the condition ranges from 100 upward. Ohio rises to 119; Tennessee and West Virgina, 111; Massachusetts and California, 110; Wisconsin and Kansas, 108; Virginia, 107; Connecticut, Illinois, Missouri, and Oregon, 106; Delaware, Alabama, and Michigan, 105; Pennsylvania and Georgia, 104.

THE GRASS-CROP.

Though regular returns for the condition of the grass-crop, aside from clover, were not made June 1, yet references of our correspondents, in notes, to its general status in all parts of the country, were sufficiently numerous to show that the prospects for an abundant hay-crop were, at that date, very flattering. But limited and slight injuries from winter-killing were noted; the spring weather was generally very favorable for the "setting" of thick and vigorous coats of grass; and, except in Kentucky, injuries from drought had scarcely been felt.

The notes below will give local details respecting the condition and prospects of clover, spring pastures, and grass.

MAINE.—*Piscataquis:* Pastures and all grasses have started extremely well. *Waldo:* Grass is looking very fine—first rate. *York:* Grass but little winter-killed, and well set. *Androscoggin:* Grass and pastures are looking finely. *Aroostook:* Grass of all kinds came through the winter in excellent condition; promise of abundant crop of hay. *Cumberland:* About 5 per cent. of the clover winter-killed.

NEW HAMPSHIRE.—*Carroll:* Grass is looking well, though winter-killed by ice in the low lands. *Hillsborough:* The grass-crop never looked better. *Rockingham:* Pastures not badly winter-killed, but late. *Cheshire:* Mowing-fields and pastures looking finely.

VERMONT.—*Franklin:* Excellent season for the grass-crop. *Grand Isle:* Clover winter-killed. *Caledonia:* Clover badly winter-killed, and pastures to some extent.

MASSACHUSETTS.—*Berkshire:* Early rains in May were a great benefit to grass; pastures are excellent.

CONNECTICUT.—*New London:* Pastures very good.

NEW YORK.—*Westchester:* Pastures never looked better. *Albany:* Clover and pastures fine. *Saratoga:* Grass looks fine. *Wyoming:* Some clover winter-killed, but the crop looks well. *Sullivan:* Pastures superior. *Seneca:* Clover badly winter-killed. *Wayne:* The prospects for grass and clover better than average.

NEW JERSEY.—*Mercer:* Fine rains have had a wonderful effect on grass. *Sussex:* The open winter was very disastrous to young grass and clover. *Burlington:* Owing to last year's drought some fields have very little clover; that sown this spring looks well. *Camden:* Clover large, but thin; timothy yet quite small. *Warren:* Pastures a little short and backward; clover half a crop.

PENNSYLVANIA.—*Delaware:* Clover is well set and of vigorous growth; in grass we will be more than compensated for the short yield last year; pastures afford abundant food for stock. *Tioga:* Favorable weather has advanced the grass-crop far beyond expectation. *Beaver:* A dry and cold April hurt the pastures badly. *Clearfield:* Clover badly winter-killed, but doing better than was anticipated in early spring. *Monroe:* Grass looks fine. *Bedford:* Sufficient rain to keep grass growing; clover very good, though the drought last season destroyed most of that sown in the spring of 1875. *Sullivan:* Pastures and grass as forward as at the 20th of June last year. *Columbia:* Grass is late, but looking well. *Indiana:* Fine weather for the grass-crop, and grass and pastures doing finely. *Mifflin:* Clover-fields were much frozen out. *York:* Favorable indications of a more than average crop of hay. *Washington:* Spring pastures the best for years, and meadows are doing finely.

MARYLAND.—*Caroline:* Pastures are very good; clover never looked better. *Montgomery:* Grass promising, but a lack of clover. *Prince George's:* Spring pastures never better; the decrease in acreage of clover is owing to high price of seed; the clover which caught last year looks well. *Howard:* Hay and pasture will be short. *Harford:* The hay-crop will be above an average.

VIRGINIA.—*Augusta:* Clover is heading very short. *Dinwiddie:* The farmers are generally seeding more clover this season. *Lancaster:* Clover and pastures were never better. *Loudoun:* Grass and clover look well. *Orange:* The present dry weather exceedingly unfavorable to grass. *Montgomery:* The season is most favorable for all kinds of grasses. *Madison:* Pastures good and clover better than last year, but the acreage less. *Floyd:* Grass-crop very promising. *Wythe:* Pastures and clover are not average.

NORTH CAROLINA.—*Forsyth:* Grass very fine; clover as good as need be; clover and the grasses have done finely. *Haywood:* Pastures looking very fine; our people are increasing their clover-fields every year.

SOUTH CAROLINA.—*Chester:* More attention to clover, which is very fine. *Newberry:* Clover luxuriant and thick.

GEORGIA.—*Troup:* Spring pastures good and cattle fat. *Carroll:* Pastures very fine.

FLORIDA.—*Gadsden:* Backward, owing to the dry winter, but rapidly improving.

ALABAMA.—*Jackson:* Pastures never better, particularly red clover and orchard grass. *Conecuh:* Spring pastures good. *De Kalb:* Clover never presented a finer appearance.

MISSISSIPPI.—*Perry:* Pastures 10 to 20 per cent. better than ordinary. *Jefferson:* Pastures splendid.

LOUISIANA.—*Franklin:* Spring pastures very good.

TEXAS.—*Washington:* Very good range or pasturage. *Collin:* Alfalfa has been planted in small lots and is doing finely; other clovers have proved a partial failure. *Cooke:* Prairie-grass very fine. *Nueces:* Grass is coming out finely, and stock of all kinds doing well.

ARKANSAS.—*Arkansas:* The range is excellent. *Ashley:* Fine pasturage; plenty of fat beef off the range. *Fulton:* Prairie-grass very fine, and cattle, sheep, and horses fat.

TENNESSEE.—*Williamson:* Pastures extra fine; very large increase of clover all over the county, and it looks well. *Lincoln:* Pastures, and especially clover, are unusually fine. *Gibson:* Spring pastures fine, and clover was never more luxuriant. *Monroe:* Spring pastures more than sufficient for the demands; clover magnificent. *Rhea:* Grass and clover better than for fifteen years. *Sullivan:* Grass and clover very fine. *Bedford:* Pastures fine, enough to supply the stock and leave a fine coat for fertilization. Clover very fine and now ready to cut. *Sevier:* Pastures never so good before. *De Kalb:* Grass and clover were never better. *Granger:* Pastures very good; some early-sown clover killed by the freeze, but otherwise the crop is doing finely. *Greene:* Clover very thrifty. *James:* Clover and all the grasses promise well. *Bradley:* Pastures so rich that butter is selling at 15 cents per pound. Clover is exceedingly fine. *Giles:* Clover is increased 33 per cent. and is very fine.

WEST VIRGINIA.—*Grant:* Grass looks remarkably well. *Marion:* Meadows and pastures are having a very fine start; better than for five years. *Nicholas:* Grass looks well. *Mercer:* Grass of all kinds looking well. *Greenbrier:* Clover and blue grass are unusually fine. *Wetzel:* Clover will make a heavy crop. *Braxton:* Pastures,

grass, and clover very good. *Upshur:* Pastures never better. *Cabell:* Grass has suffered very much by drought. *Doddridge:* All grasses the best for many years. *Summers:* Pastures very good.

KENTUCKY.—*Bath:* A failure of the oat-crop for a few years past has caused an increased area in Hungarian grass. *Shelby:* Pastures at least one month late. *Calloway:* Clover excellent. *Simpson:* Clover fine as ever known. *Spencer:* Pastures have suffered from dry weather. White blossom and white clover have appeared in great excess in timothy-meadows and clover-fields, and the hay-crop will be cut very short thereby. *Gallatin:* Clover and spring pastures have suffered from drought. *Meade:* Grass very short, owing to drought. *Nicholas:* Pastures and clover short, owing to drought. *Henry:* The great abundance of the weed known here as white blossom has entirely destroyed the timothy and clover crops. *Owen:* Clover and pastures reduced 10 per cent. by drought.

OHIO.—*Trumbull:* Grass looks very prosperous, and pastures are abundant. *Franklin:* A favorable season for the grasses. *Morrow:* Pastures are first rate, and meadows that were not frozen out promise fair. *Vinton:* Meadows never looked better. *Crawford:* Very flattering prospect for a large hay-crop. *Delaware:* Pastures never better, and clover full average. *Ross:* Fine prospect for clover and timothy. *Geauga:* The grass-crop promises to be the best for years. *Sandusky:* Good pastures.

MICHIGAN.—*Oakland:* Clover will be too large for profit. Pastures never better. *Kalamazoo:* Grass looks exceedingly well. *Calhoun:* Clover is most luxuriant. *Lenawee:* The weather has been good for grass-crops. *Shiawassee:* Pastures never better. *Van Buren:* The season favorable for grass and clover. *Mason:* Pastures look very fine. *Saint Joseph:* The grasses have a very fine start.

INDIANA.—*Noble:* Clover never much better. *Warren:* Pastures fine. The white blossom is taking the old meadows. *Whitley:* Pastures good. *Howard:* Clover suffered from winter-killing; pastures fair. *Crawford:* Suffering very much for want of rain. *Dearborn:* Seriously damaged by drought through May. *Hamilton:* Pastures are splendid; old clover badly winter-killed; young, looks well. *Lake:* The grass-crop very fine. *Wells:* Clover winter-killed. *Switzerland:* Pastures are excellent.

ILLINOIS.—*Macoupin:* Meadows and pastures are unusually good. *Clay:* Prospect of abundant crops in meadows and pastures. *Tazewell:* Pastures splendid. *Gallatin:* All the grasses look well. *Boone:* Clover in good order. *Clinton:* Clover was winter-killed. *Fayette:* All pasturage good. *Mason:* Clover good, but pastures short, owing to dry weather. *Jefferson:* Pastures the best for years; clover looks well; all grasses are fine. *Mercer:* Pastures and clover fine, but timothy scarce.

WISCONSIN.—*Waupacca:* Clover badly winter-killed. *Dodge:* Clover from which a crop of hay was taken last year generally killed; that seeded last year generally good. *Walworth:* Winter-killed.

MINNESOTA.—*Steele:* Grass is unusually good. *Stevens:* All wild prairies are in fine condition.

IOWA.—*Woodbury:* Our pastures are all of native grasses, which never winter-kill. *Hardin:* Pastures yield a big crop, and very nourishing; clover killed in spots. *Marion:* Pastures good, and meadows promise a good yield. *Ida:* More forward than common. *Appanoose:* Pastures very good. *Sac:* The prairie pasture is very good.

MISSOURI.—*Platte:* Pastures never better. This spring the farmers sowed many acres of clover, which promise a rich harvest. *Pettis:* Splendid pastures. *Morris:* Meadows never better. *Reynolds:* Grass-meadows are fine.

KANSAS.—*Cowley:* Grass looks fine. *Osage:* Pastures very fine; many cattle now excellent beef. *Cherokee:* Pastures excellent. *Douglas:* Wild grasses look as well as rain and sunshine can make them.

CALIFORNIA.—*Yuba:* Spring pasturage grand, owing to a large amount of early rains. There is an increase of alfalfa, the only clover raised here. *Santa Clara:* The hay-crop a little more than average, with a heavy percentage of the old crop on hand. *Sonoma:* Better than for twenty years; dairymen are reaping a rich harvest. *Kern:* Have finished cutting the first crop of alfalfa. *Mendocino:* A very fine prospect for hay, which the farmers are now busy in cutting. *Stanislaus:* About ten times more hay has been cut in this county than ever before. *Amador:* There is a constant increase in the acreage of alfalfa. The several crops cut in a year amount, in some instances, to nine tons per acre; usually to five or six. It makes very nutritious hay. *Butte:* The condition of pastures and alfalfa is all that could be desired. *Napa:* The reported increase of alfalfa, 10 per cent., is probably an underestimate. Our pasture grows during the winter and early spring. It becomes dry by the first of June, but retains its nutritiousness, and may properly be called "natural hay."

OREGON.—*Columbia:* Pastures never better.

COLORADO.—*El Paso:* Pasturage superabundant, and stock of all kinds have done exceedingly well, except that they have suffered from the hard storm, May 23.

DAKOTA.—*Davison:* Pastures are looking well. *Buffalo:* No rain in three months, and as a consequence, poor pasturage.

WASHINGTON.—*Walla-Walla:* The grass and hay crops are very fine. *Whitman:* The native pasturage is unusually fine, and all kinds of stock are doing finely.

FRUIT.

The apple crop of the New England States is generally above average. In York, Maine, myriads of caterpillars hatched out about May 20, but the subsequent cold weather appears to have effectually disposed of them. In Oxford, last year, they left a record of damages behind them.

In the Middle States the bloom was abundant; the apples are above average and peaches below, the peach regions of Delaware reporting a very depressed prospect. Other kinds of fruits are promising.

Of the South Atlantic States, Maryland promises a full crop of apples and at least a half crop of peaches. In Virginia both these fruits are less prosperous. A cold spring with hard freezes following a mild winter, in several counties, cut down a previous fine prospect; apples are less than an average and peaches one-third. South Carolina complains of extensive injuries by frost. In Pitts a blight injures the ends of the limbs and the fruit; apples eight-tenths of an average and peaches one-half. The freeze extended to South Carolina and Georgia, though fair crops are expected on high lands. Warm winter succeeded by cold in spring caused great destruction in some localities. These States promise about three-fourths of a crop of apples, and less than half a crop of peaches.

The Gulf States are still more chary of promise to these two crops, but in the tropical and semi-tropical parts of Florida there is fair promise. In Santa Rosa unusual alternations of warm and cold weather caused successive bloomings on peach-trees. Autauga, Alabama, complains of a small insect injuring fruit, boring into the sprig just below the bud. In several counties, in the Gulf region, severe frosts were felt. In East Baton Rouge, Louisiana, the thermometer falling to 29°, strange to say, the bananas escaped, while the peaches, plums, and nearly all the grapes were killed, and apples and pears greatly injured; whereas, in previous winters, when the thermometer has fallen as low as 19°, neither tree nor fruit of these varieties was injured, while bananas were entirely killed. Severe frosts were noted also in Texas.

The inland Southern States indicate about eight-tenths of an average crop of apples, but not over a fourth of a crop of peaches. Here untimely frosts did their work with greater effect in many sections from the warmth of the winter.

The States north of the Ohio will, on the whole, probably turn out a full crop of apples, the deficiency in Illinois and Indiana being more than made good by the large surplus in Michigan and Wisconsin; Ohio is above average. Injuries from frost seem to have been more local in their character in this region, though several counties complain of them as severe. Michigan will have a full peach-crop, but the others not one-half average.

Of the States west of the Mississippi River, the northern portions promise a surplus crop of apples, while Missouri and Kansas drop below average. Iowa will have an unusual crop of peaches, while Missouri and Kansas will be about half average. Untimely frosts are noted in the southern sections, together with local hail-storms.

On the Pacific coast, California promises a full crop of apples and a surplus of peaches; Oregon a full crop of apples, but not quite of peaches.

MAINE.—*Piscataquis:* Apples but just leaved out. *York:* The bloom abundant Myriads of caterpillars hatched about the 20th of May, but the cold weather killed all. *Androscoggin:* Just coming out, with a fair prospect. *Cumberland:* Not yet in full

bloom; will be very full. *Oxford:* Showing but very little bloom, owing to ravages of caterpillars last year. *Somerset:* Have not yet blossomed.

NEW HAMPSHIRE.—*Carroll:* Apples will blossom well. *Hillsborough:* Apples promise a very large crop. *Rockingham:* Apples in full bloom, and a promise of an abundant crop. *Cheshire:* Apple-trees loaded with blossoms.

VERMONT.—*Franklin:* Not yet in bloom. *Grand Isle:* Just in bloom; poor prospect.

MASSACHUSETTS.—*Berkshire:* In bloom, and make an excellent show.

CONNECTICUT.—Prospect of a very large crop.

NEW YORK.—*Westchester:* Full of blossoms. *Albany:* The trees are white with blossoms. *Washington:* Abundant bloom. *Lewis:* Just show the bud. *Saratoga:* The trees heavy-laden with bloom. *Wyoming:* Now in full bloom. *Sullivan:* Trees have bloomed exceedingly well. *Genesee:* Just in bloom, which is very full. *Albany:* All fruit-trees covered with blossoms. *Genesee:* Apple-bloom very full; no pear-blossoms; small fruits promising. *Seneca:* Bloom good, but injured by east wind. *Wayne:* Better than average.

NEW JERSEY.—*Sussex:* Indications of a large crop. *Burlington:* A great amount of bloom, but the young fruit is dropping off badly. *Warren:* Enough healthy-looking young apples to make a good crop. *Mercer:* Wonderful prospect for all kinds of fruit. *Camden:* Small fruits promising.

PENNSYLVANIA.—*Bucks:* Abundant bloom, and the fruit setting satisfactorily. *Lycoming:* Promise a full crop. *Sullivan:* Promise an abundant crop; never better. *Indiana:* Have set well, and promise of enormous crop. *Warren:* Good prospect for a full crop. *Elk:* Enormous bloom. *Northampton:* Promise good. *Wyoming:* Best prospect for ten years. *Armstrong:* Promise good. *Indiana:* Crop will be enormous, especially apples and cherries; pears have set well. *Mifflin:* Prospect good.

MARYLAND.—*Caroline:* Falling off. *Prince George:* Promise of an abundant crop. *Cecil:* Promise far above average in quantity. *Gloucester:* Prospect of a very heavy crop.

VIRGINIA.—*Fluvanna:* A mild winter, followed by killing frosts, will make the crop very short. *Page:* Almost entirely cut off by freeze the last of April. *Halifax:* Fruit nearly all destroyed by late frosts. *King George:* There was ice on the morning of May 1. There are no peaches on the grafted trees, but many on seedlings. A promise of many cherries, Seckel and Bartlett pears and apples. Berries promise to be plentiful. *Floyd:* Almost a failure. *Elizabeth City:* Cherries are abundant, and unusually good and cheap. Strawberries have quite glutted the local market, having sold as low as 3 cents per quart. Grapes also promise well; the vines look thrifty and are loaded with young fruit. *Northampton:* The good prospect for a fruit-crop was seriously damaged by the freeze in the latter part of April. *King and Queen:* The fruit-crop will be a good one. *Craig:* Killed by May frost. *Roanoke:* Fair crop. *Ashe:* Larger part killed. *Scott:* Very promising. *Lancaster:* Below average. *Fairfax:* Apples will be abundant. *Pulaski:* Largely frost-killed. *Patrick:* Half crop of apples and still falling off. No peaches. *Carroll:* Best prospect yet. *Frederick:* Peaches generally killed by late frosts. *Halifax:* Nearly all killed; only seedlings escaped the frost. *Amelia:* Frosts about the 1st of May, killed the few which had escaped the earlier cold. *Craig:* Killed by frost in May. *Fairfax:* May be half a crop. *King George:* The best grafted varieties killed by the frost, but the old seedlings are full of fruit. *Pulaski:* Killed by frost. *Madison:* Promise of half a crop. *Prince Edward:* Only a few. *Augusta:* Generally killed. *Greenville:* Cut off by late frosts. *Roanoke:* Nearly all killed.

NORTH CAROLINA.—*Moore:* Killed by late frosts. *Beaufort:* Will be half a crop in quantity, but of superior size and quality. *Gaston:* None. *Yancey:* All killed by a freeze, March 22. *Caswell:* Almost a failure. *Union:* Almost destroyed. *Yadkin:* Fruit all killed by the freeze. *Edgecombe:* Very scarce, but doing well. *Person:* Nearly all killed. *Ashe:* All killed by the freeze. *Richland:* Entirely destroyed by the freeze. *Orange:* Almost a failure. *Madison:* All killed. *Guilford:* All killed. *Union:* Badly injured by frost. *Yadkin:* All the early apples destroyed in the bud. *Alamance:* Half a crop. *Buncombe:* All peaches and early apples killed; prospect of a good crop of late. *Duplin:* The borer doing much damage to the trees; many killed outright. *Edgecombe:* Very scarce, but doing well. *Person:* Nearly all killed. *Pitt:* A species of blight has attacked the apple-trees, appearing in the ends of the smaller branches and in the fruit-bearing branches generally. It threatens to destroy much of the fruit. *Orange:* Promised well, but have dropped off badly. *Guilford:* But very few; killed by frost. *Lenoir:* Fruit-trees loaded. *Harriet:* Frost killed.

SOUTH CAROLINIA, *Chester:* A fair crop on high ridges. *Clarendon:* Almost all destroyed by the freeze in March. Insects very destructive to early branches of peach-trees. *Lexington:* Good, but in some cases young apples and ends of limbs are destroyed by insects.

GEORGIA.—*Worth:* All killed by the freeze in March. *Macon:* The remarkably warm weather of mid-winter caused the buds of the apple and peach trees to swell and become tender, and then the cold in the latter part of January harmed them. The ends

of the twigs were killed, the trees seemed to go back into winter-quarters for good, and they actually remained there five to eight weeks later than usual. They then put forth considerable bloom, giving the hope of some fruit; but most of the blooms were defective, and the few fructified have been destroyed by the curculio. *Marion:* The fruit-crop will be almost an entire failure. The peaches were so stunned by the cold in the spring that some have just put forth their leaves. Many were entirely killed. *Laurens:* All kinds almost an entire failure. *Troup:* Injured by frost, but a promise of half a crop of fine fruit. *Montgomery:* All kinds very much injured by the cold spring. *Henry:* Peaches a failure; half crop of apples. *Rabun:* Much cut off by spring cold. *White:* Peaches, a total failure; apples, promising. *Taylor:* Extreme cold weather in March reduced the crop. *Towns:* All killed by cold. *Dooly:* Nearly all killed by the freeze. *Gordon:* Killed by frost. *Wayne:* A total failure. *Gwinnett:* Killed by a snow the last of March. *Randolph:* Almost a failure. *Richmond:* A few orchards are laden with fruit in profusion, while others will not produce a bushel to the acre. *Elbert:* Materially injured by a late frost. *Macon:* Near a total failure. *Cobb:* Entire failure. *De Kalb:* Nearly all destroyed by the freeze in March. *Stewart:* Materially damaged by the freeze. *Walton:* Very near a failure. *Richmond:* Apple trees greatly blighted. *Barlow:* Many apple-trees blasted and leaves turned black. *Fayette:* Many trees damaged. *Cobb:* A blight or something else has appeared on the trees, which is causing the apples to fall off very fast. The small twigs on which the apples are die two or three inches back.

FLORIDA.—*Putnam:* The prospect for the orange-crop is good. Watermelons are coming in freely, of very fine quality. *Santa Rosa:* Owing to unusual alternating of warm and cold weather, we have on same trees peaches of three different bloomings and of corresponding sizes. Some of the trees which had not bloomed up to the time of the first freeze, the latter part of February, did not until the 15th to the 20th of May. Indeed, on some trees blooms are to be seen even up to this time. *La Fayette:* All fruit destroyed by freeze, March 19. *Columbia:* Badly frosted.

ALABAMA.—*Macon:* Almost an entire failure. *Perry:* Badly frosted. *Calhoun:* Spring frosts. *Butler:* Injured by cold spring following warm winter. *Randolph:* Very fine. *Dale:* A total failure; apple and peach trees just now leafing out and blooming; many are dead; no one can account for it. *Covington:* Prospect of a failure; just as the trees were blooming, in February, the coldest spell of the winter froze the opening buds. *Blount:* In some localities, none; in others a full crop. *Randolph:* Plenty. *Conecuh:* In full bloom at this time—later than ever known—and the hot sun is causing the fruit to drop. *Autauga:* A large bloom, but a small insect, not larger than a flea, bored into the sprig just below the bloom and killed the entire sprig. *Lauderdale:* Almost a failure. *Butler:* Seriously injured. *Coffee:* Almost an entire failure. *Greene:* Short crop.

MISSISSIPPI.—*Amite:* Fine, except peaches. *Covington:* Nearly a failure owing to late frosts. *Choctaw:* Not more than 50 per cent. of last year's crop. *Jefferson:* Nearly all frost-killed. *Lauderdale:* Cold spring. *Lee:* March cold, destructive. *Rankin:* Almost a failure. *Wilkinson:* Many trees killed by March freeze. *Adams:* Badly damaged; a failure. *Covington:* Peaches nearly a failure. *Lauderdale:* Peaches a failure. *Lincoln:* Peaches destroyed by frost. *Choctaw:* Only 25 per cent. of a crop of peaches, wing to the freeze. *Perry:* Late frosts caused a failure in peaches.

LOUISIANA.—*East Baton Rouge:* The freeze, March 19 and 20, destroyed all the peaches and plums, nearly all the grapes, and greatly injured apples and pears. The grapes are again putting forth shoots, and there will be about a fourth of a crop. Not only were the fruit-buds on the peach-trees killed, but the leaf-buds and the entire trees were so injured that they are even yet destitute of foliage. The new leaf-buds are just beginning to appear. The thermometer descended only to 29°. What is strange, it did not kill the bananas, while in past winters we have had the thermometer as low as 19°, entirely killing the bananas, but not injuring tree or fruit of apple, pear, peach, plum, or grape. *Richland:* The fruit-crop much damaged by frost; peaches and pears have suffered most. *Lafayette:* Fruit-crops almost a total failure, owing to the severe freeze March 21. *Jackson:* The freezing weather destroyed in a great degree the fruit, particularly plums and early peaches. *Franklin:* Full 60 per cent. of apple-bloom blasted. *Moorehouse:* Nearly all frost-killed. *Jackson:* Half crops. *Bienville:* Early peaches destroyed by freezing *Franklin:* Peaches very late in blooming, and 60 per cent. blasted. *Moorehouse:* Nearly all the peaches destroyed.

TEXAS.—*Llano:* Materially damaged by late frosts. *Upshur:* Early peaches all killed. *Bandera:* Peaches half frost-killed. *Titus:* Badly damaged by frost, and apples and pears also, by blight. *Washington:* All grafted and imported fruit-trees completely failing; supposed to be owing to late cold and freezes; seedlings will generally bear. *Ellis:* Peaches almost a failure, through frost. *Jacinto:* Peaches a failure. *Wood:* Somewhat injured by late frost. *Gonzales:* Nearly a failure, owing to late frosts—peaches and grapes. *Burnet:* Peaches mostly frost-killed. *Austin:* Peach-crop nothing. *Collin:* Cut short by late frosts. *Polk:* Badly injured by frost. *Anderson:* Except apples, nearly average, all fruit greatly injured by premature blooming and subsequent freezing. *Nacogdoches:*

Fruit is a failure, owing to the cold weather in March. *Wood:* Apples fine. *Panola:* Apple-trees late leaving, some still leafless. *Navarro:* Will be a full crop of fruit in some localities, and in others contiguous all was destroyed by frost. *Marion:* While the peach-crop is indifferent, the grape and berry crops are excellent. *Burleson:* Apple-blooms half destroyed by frosts. *Upshur:* Destructive cold. *Panola:* Peaches a small crop.

ARKANSAS.—*Baxter:* All killed March 20. *Dallas:* Killed by the freeze and snow in March, when the thermometer went 12° below the freezing-point. *Izard:* The cold storm in March destroyed nearly all the fruit and injured the trees. *Prairie:* The heavy snow in March killed nearly all the peaches and plums, and many of the trees. *Yell:* Pear-trees are dying all over the county. *Cross:* All kinds, except a few apples, killed by snow in March. *Craighead:* Nearly a failure. *Jefferson:* Slight prospect. *Saint Francis:* Cut off at least one-half. *Jackson:* The early apples are killed. *Ouachita:* What are on the trees very poor, and not more than 10 per cent. of a crop. *Sharp:* Greatly damaged by the freeze. *Woodruff:* Good. *Arkansas:* May make a fair crop, but there s something unnatural; some trees have on one part apples as large as quails' eggs, while the other part is in early bloom. Have seen it so in several orchards. *Franklin:* Peaches nearly all killed. *Sebastian:* Peaches killed. *Benton:* All peaches killed. *Van Buren:* All peaches killed by a big snow in March. *Hempstead:* Peaches mostly killed by late frosts. *Monroe:* Peaches all killed by freeze in March. *Jackson:* Peaches nearly all killed. *Stone:* Peaches killed. *Crittenden:* Peaches all killed. *Crawford:* Peaches killed. *Independence:* Peaches injured by the snow-storm in March. *Perry:* Entirely destroyed by the freeze. *Sharp:* Peaches killed. *Ashley:* Peaches killed. *Yell:* Peaches all killed. *Marion:* Peaches a total failure.

TENNESSEE.—*Lewis:* All killed in March. *Williamson:* Nearly all killed. *McNairy:* Almost a failure, owing to a heavy snow in April. *Loudon:* All dropping off. *Craighead:* Peaches a failure. *Saint Francis:* Entire failure. *Monroe:* Total failure. *Tipton:* Entire failure. *Bedford:* Almost a failure; killed by the late freeze. *Greene:* Scattering; April chills caused them to fall off. *Giles:* All but 5 per cent. killed. *Fayette:* Nearly all killed by 8 inches of snow March 18. *Lauderdale:* Peaches almost a failure. *McNairy:* Partly killed by heavy snow in April; those left look rather unhealthy. *Loudon:* Will be a light crop. *Grundy:* The frost mostly killed the winter and summer apples, but the fall-apples suffered but very little. *Monroe:* Good. *Bedford:* Exceedingly abundant. *Greene:* A thin crop. *James:* Will be a full crop. *Giles:* Immense crop now on the trees. *Maury:* All kinds abundant, except peaches. *Sevier:* Small fruits extra good.

WEST VIRGINIA.—*Nicholas:* Very light crop. *Putnam:* Three-fourths of peaches destroyed by the cold in March. *Preston:* Apples bid fair for a good yield. *Wetzel:* Apples bid fair to be very abundant; peaches few. *Braxton:* Peaches a small crop. *Taylor:* Fine prospect. *Brooke:* Prospect of an extra crop. *Cabell:* Early apples a failure; late, a fair crop. *Summers:* The prospect very good on the low land; light on the uplands. *Pendleton:* The crops materially injured by the late cold. *Randolph:* Nearly an average bloom, but falling off. *Calloway:* Not a good crop. *Hardin:* Very few. *Owsley:* Promise of 75 per cent. of a crop. *Spencer:* Cut short by frosts. *Gallatin:* Half a crop. *Grant:* A fine prospect. *Nicholas:* Very light crop of apples and cherries, and no other fruit. *Tucker:* Will not be much fruit of any kind. *Cabell:* Pears and plums, as well as peaches, a failure. *Pendleton:* Severe frosts materially injured the apple crop, and entirely destroyed peaches, plums, and cherries. *Mercer:* Peaches killed.

KENTUCKY.—*Anderson:* Very few peaches. *Jefferson:* Peaches destroyed. *Calloway:* Peaches very scarce. *Hardin:* None. *Owsley:* All killed by the snow and freeze March 20. *Spencer:* Nearly destroyed. *Gallatin:* Prospect of half a crop of apples, peaches, and other fruits. *Nicholas:* Peaches almost a failure. *Henry:* Such fruits as escaped the frosts are doing well.

OHIO.—*Greene:* A freeze in April almost destroyed our prospects for fruit; and besides this, a web-worm is almost ruining many orchards by stripping the trees of their foliage. *Trumbull:* All kinds except peaches bid fair to be an immense crop. *Athens:* Apples, peaches, and small fruit, except grapes, badly injured by freeze May 1, and again by a severe hail-storm May 21. *Morrow:* Apples promise fair, but other fruits will be scarce. *Vinton:* A frost, May 1, killed all the peach, and on low ground, most of the other fruit; on high ground, there will be half a crop of apples, and some pears and cherries. *Delaware:* The measuring-worm is going for our fruit. *Portage:* Peaches, plums, cherries, and the more tender fruits killed to a great extent by frosts. *Hardin:* Pears and peaches a failure; cherries promise well. *Medina:* Other fruits than peaches promise abundantly. *Monroe:* Cherries half a crop; small fruits. *Ross:* Peaches a failure. *Monroe:* Very few peaches. *Preble:* Never more promising. *Williams:* An unprecedented bloom. *Ashland:* Frosts destroyed some early apples. *Crawford:* Fair prospect. *Hamilton:* Prospect of a good crop, except peaches. *Noble:* Not over half a crop. *Portage:* Never more promising, *Hardin:* Promise well. *Ross:* Half a crop. *Huron:* Bid fair for a big crop. *Wood:* Two-thirds the bloom destroyed by frost, but enough left for a good crop. *Geauga:* Promise of the heaviest crop for

many years. *Sandusky:* Good outlook. *Meigs:* Frosts killed many of the early peaches. *Franklin:* Peaches killed.

MICHIGAN.—*Ionia:* Many of the trees have been killed by recent severe winters, but those left promise a full crop. *Oakland:* Fuller blossom than ever before seen. *Lenawee.* A very full bloom. *Shiawassee:* Promise better than for some years. *Grand Traverse:* A very full bloom all over the county. *Muskegon:* Three-fourths of the peaches killed. *Ottawa:* All kinds promising. *Wayne:* Prospect never better. *Mason:* Prospect fine.

INDIANA.—*Whitley:* Never a finer bloom, but the fruit has not set well as was hoped. *Franklin:* Trees unusually full of bloom, but fruit not abundant. *Howard:* Prospect of apples above average, peaches mostly killed. *Floyd:* The crop will be large. *Hamilton:* A full bloom of apples but fruit falling off badly; peaches a fair crop. *Carroll:* Apples and peaches much damaged by frosts. *Washington:* Peaches an entire failure, except on budded trees. *Kosciusko:* Fruit prospects were never more promising until within two weeks; since which, have had an east wind almost continually, and at least 50 per cent. of the apples have fallen off, and a large per cent. of the cherries. *Noble:* The prospect for fruit is good. *Floyd:* Small fruits very abundant; a few early peaches and no late ones. *Cass:* Killing frosts May 22d and 23d, badly injured the finest of fruit prospects. *Lake:* Fruit has the best showing ever known. *Wells:* Frost May 7th, killed fruit to a considerable extent. *Madison:* All fine except the peach-crop.

ILLINOIS.—*Boone:* Blossomed profusely, but owing to cold and wind will not be more than average crops of fruit. *De Kalb:* Fruits of all kinds promise well; cherries, a good crop, and grapes above average; apples 20 per cent. below average. *White:* Fruit killed by the cold weather in March. *Logan:* Apples not setting well, falling off. *Bureau:* Prospect of the largest crop of apples ever raised, though some complaint of dropping off. *Tazewell:* Canker-worms have appeared in a few of the large orchards. The prospects for small fruits splendid. *Clinton:* Apples injured by frost. *Fayette:* Prospect very good. *Mason:* Short crop of apples. *Sangamon:* Apples falling off badly. *Jefferson:* Half a crop of apples. *Hancock:* Half the apples have dropped off. *McLean:* Apples have dropped off badly. *Logan:* Peach-trees badly winter-killed. *Mercer:* Few peach-trees, but well loaded.

WISCONSIN.—*Green Lake:* Promise a large crop, especially of apples. *Richland:* Fullest blossom for years. *Washington:* Promise of an abundant crop. *Greene:* Promise abundant.

IOWA.—*Woodbury:* There are a great many young orchards not yet in bearing, all doing well. The few in bearing have done well, and will produce some fruit. *Hardin:* Promise a very heavy yield. *Clayton:* Never a better prospect. *Iowa:* Our few trees full. *Jefferson:* The fruit prospect is the finest for years; all kinds promise abundantly. *Sac:* In this new county the orchards are young, but some apple and cherry orchards just coming into bearing give great promise.

MISSOURI.—*De Kalb:* Every kind promises a large yield. *Clay:* Fruit short, owing to a freeze after the buds were partially opened. *Pettis;* Half a crop of cherries and a fair crop of grapes. *Johnson:* Very little fruit, owing to storm and cold the last week in March. *Barton:* Peaches and all small fruits killed by the freeze in March. *Jefferson:* The prospect is good for cherries and grapes. *Calloway:* Fruit has dropped off the trees badly. *Laclede:* Peaches nearly all killed. *Pemiscot:* Peaches all killed. *Stone:* Fourth of a crop. *Christian:* Not good. *Stoddard:* Killed. *Saint Geneviere:* All killed, except a small percentage of very hardy seedlings. *Chariton:* Peaches killed. *Mississippi:* Peaches all killed in some parts. *Polk:* Peaches killed. *Cass:* Apples and peaches nearly all destroyed by three hail-storms. *Jefferson:* Poor prospect. *Dallas:* Peaches a failure; apples injured by hail. *Butler:* Apples and peaches half killed by the frost. *Laclede:* Apples nearly all killed. *Platte:* Scarcely 25 per cent. of a bloom. Now a small worm, ¾ of an inch long, called by some the canker-worm, is making sad havoc among the apple-orchards, eating all the leaves and destroying the apples. *Stone:* Half a crop of apples. *Holt:* A bug, allied to the chinch, injured the apple-blossoms. They were very numerous in some orchards. The canker-worm has stripped a few orchards in the eastern part of the county of their leaves and fruit. The codling-moth is the principal enemy of the apple in this part of the country. The destruction by them equals fully 20 per cent. of the crop. *Perry:* Half a crop of apples, and still falling off. *Pettis:* Three-fourths of a crop of apples. *Stoddard:* Most of the apples killed by a freeze. *Saint Genevieve:* Late frosts very destructive. *Charidon:* Apples killed.

KANSAS.—*Shawnee:* Fruit destroyed by hail. *Cowley:* Peaches killed. *Osage:* Almost a total failure. *Barbour:* Prospect of apples greater than ever before. *Doniphan:* Apple-blossoms injured by a small brown bug; peaches killed. *Cherokee:* About the first crop of apples raised is doing well; peaches a failure. *Brown:* Destroyed through the center of the county by a violent storm. *Douglas:* Some appearance of blight on the trees. *Labette:* Rose chafer did much damage to early apples. *Elk:* Peaches killed. *Brown:* Peaches destroyed. *Montgomery:* Peaches killed on bottom-lands; a few on uplands.

NEBRASKA.—*Hall:* Fruit generally promising. *Richardson:* Fruit-crops generally failed. *Nemaha:* Destructive hail-storm.

CALIFORNIA.—*Sonoma:* Fruit promising; vintage promises a large and excellent yield. *Yuba:* Crops short. *Placer:* Better than for many years. *Butte:* Excellent. *San Joaquin:* All good; grape crop will be enormous. *Amada:* Injured by terrific storm.

OREGON.—*Clackamas:* Injured by cold.

UTAH.—*Kane:* Prospects never better. *Utah:* Injurious frost. *Beaver:* Injurious frost.

ARIZONA.—*Maricopa:* Better than ever before: figs bearing full.

MAPLE SUGAR AND MOLASSES.

The product of maple-sugar during the past season declined about 10 per cent. from the product of the previous season. The only States that equaled last year's aggregate were Massachusetts, Connecticut, Pennsylvania, and Michigan. The decline in maple-molasses has been at about the same rate. Only Pennsylvania, Ohio, Michigan, and Indiana equaled last year's product. The gradual decline of this branch of production is attested by the late census reports. In 1870 we produced 28,443,645 pounds of maple-sugar and 6,503,323 gallons of molasses; in 1860 we produced 40,120,205 pounds of sugar and 14,963,996 gallons of molasses—a decrease of 11,676,560 pounds of sugar and of 8,460,673 gallons of molasses in ten years.

COWS.

The condition of cows is above average in every State of the Union except Oregon, which reports 98 per cent. The highest condition is found in the States west of the Mississippi River, and the maximum, 113, in Kansas. On the Atlantic slope, Georgia reports 7 per cent. and Maine 6 per cent. above average. In New England and Middle States the range is slightly above; the South Atlantic States a little higher. The winter was generally favorable on the Atlantic slope for cattle. Forsyth, Georgia, reports a disease of unknown character that had been two weeks raging at the date of the report. In some parts of Florida the dry winter had dwarfed the grasses, but, generally, the condition was good. Alabama and Texas report 8 per cent. above average. The southern inland States indicate an unusually good condition, averaging somewhat above the States north of the Ohio River. The dairy section of Michigan seems unusually well satisfied with the condition of cows, while in many localities in Indiana better care of this class of farm-animals, including better shelter, is noted. The same improvement is also indicated in the States west of the Mississippi River, where the merciful policy is illustrating its superior economic value. An unusually mild winter, however, greatly assists in bringing about this result. On the Pacific coast, California is 3 per cent. above average and Oregon 2 per cent. below.

MAINE.—*Waldo:* Looking remarkably well. *Androscoggin:* More being kept than usual, and they have come out very finely.

MASSACHUSETTS.—*Berkshire:* Look well.

NEW YORK.—*Albany:* Fat. *Washington:* Came out in excellent condition, and are giving extra quantities of milk.

VIRGINIA.—*Patrick:* Lean, owing to scarcity of food in the spring, but improving.

GEORGIA.—*Taylor:* The cattle on the range are in fine order. *Forsyth:* Some disease has made its appearance in the last two weeks; twelve or more cattle have died, mostly milch-cows. *Worth:* Cows have thrived well, owing to the mild winter. *Wilcox:* The dry winter and forward spring very favorable for cows, which are doing well—much better than last year.

FLORIDA.—*Gadsden:* Condition bad, owing to the dry winter which dwarfed the grasses.

TENNESSEE.—*Bedford:* Fat.

KENTUCKY.—*Gallatin:* In better condition than for several years.
MICHIGAN.—*Lenawee:* Doing better in the dairy section than ever before.
INDIANA.—*Franklin:* Better cared for than usual, in the winter, which more than made amends for the lack of straw and rough feed. *Switzerland:* Never looked better.
MISSOURI.—*Platte:* Came through the winter in fine condition, and are repaying richly; milk and butter are in great abundance.

SHEEP.

The average rate of losses of sheep by disease or other casualties varies greatly in different sections. The New England States range from 3 to 6 per cent., Connecticut showing the minimum rate of the whole country. The Middle States lost about 5 per cent. The South Atlantic States range from 4 per cent. in Maryland to 10½ per cent. in Georgia, the latter being the maximum of the whole country. Virginia reports 7 per cent.; the cause of this heavy loss is partly indicated by our correspondent in Patrick, who says that a large number of lambs were lost by neglect, the farmers relying upon the unusually favorable winter. The sharp, cold weather recurring in spring also contributed to this result. The Gulf States range from 5½ per cent. in Louisiana to 9 per cent. in Alabama; the southern inland States, from 4 per cent. in West Virginia to 10 per cent. in Arkansas. Bedford, Tennessee, reports stock-sheep in unusually fine condition, with a perceptible decrease of vcious dogs. This nuisance explains the high rate of destruction in the South generally. North of the Ohio River the rate of loss ranges from 4 per cent. in Michigan to 7 per cent. in Illinois. In Calhoun, Michigan, lambs are not developed as well as usual; losses have been especially severe among high grades. West of the Mississippi River, Missouri and Nebraska lost at the rate of 8 per cent., while Kansas lost but 4 per cent.; Minnesota and Iowa, 5 per cent. Saunders, Nebraska, lost 22 per cent., 20 of which were through the ravages of dogs. Our correspondent here had 484 killed in one night; he afterward lost 200 lambs, leaving him almost "muttonless." Pawnee County lost heavily from floods, one farmer losing 100 sheep and 150 lambs. On the Pacific coast, California lost 7 per cent. and Oregon 4 per cent. El Paso, Colorado, reports a loss of 5 per cent. from a storm May 23, when, on what is called "the divide," the snow fell to the depth of 15 inches.

VIRGINIA.—*Patrick:* Greater loss of lambs than ever known, ascribed to neglect induced by the favorable winter.
TENNESSEE.—*Bedford:* Stock-sheep are in better condition than I ever saw them; are burdened with fat. We have more and better sheep and fewer dogs than ever before.
MICHIGAN.—*Calhoun:* Complaint that lambs dropped are not usually well developed; are not strong and healthy. Losses have been much greater than usual, especially among high grades.
NEBRASKA.—*Saunders:* Of the 22 per cent. loss among sheep, 20 per cent. is directly chargeable to dogs. The reporter had 484 killed in one night, and afterward sustained a loss of about 200 lambs, which had been left motherless. *Pawnee:* The loss of sheep was caused by their being carried off in high water from excessive rains. One man lost over 100 old sheep and 150 lambs.
COLORADO.—*El Paso:* A loss of 5 per cent., including lambs, from a storm of unusual severity, occurring May 23. On what is known here as the divide, snow fell to the depth of fifteen inches, and in Summit Park, at the head of Ute Pass, to the depth of two feet.
NEW HAMPSHIRE.—*Carroll:* Quite a number have died from grub in the head. Is there no remedy that will destroy the worm and save the sheep?
VERMONT.—*Caledonia:* Early-sheared sheep suffered severely from sudden changes from very warm to extreme cold weather. One farmer lost 24 out of 36, and others lost more or less. Early shearing is a cruel, and, as a rule, a very unprofitable practice.
PENNSYLVANIA.—*Wyoming:* Never knew sheep to do as well before. Almost every flock has doubled, and some I know have trebled. *Washington:* Doing splendidly on the abundant pasturage. Now being sheared, and are turning off fleeces a shade heavier than usual.

Table showing the condition of the crops, &c., on the 1st day of June, 1876.

States.	WINTER WHEAT.	WINTER RYE.	WINTER BARLEY.	SPRING WHEAT.		SPRING BARLEY.		OATS.		SPRING PASTURE.
	Average condition June 1.	Average condition June 1.	Average condition June 1.	Acreage sown this spring compared with last.	Average condition June 1.	Acreage sown this spring compared with last.	Average condition June 1.	Acreage compared with last year.	Average condition June 1.	Average condition June 1.
Maine	98	99	.....	100	100	100	99	96	100	103
New Hampshire	96	93	.....	100	98	100	99	101	101	100
Vermont	72	94	.....	94	99	107	101	101	100	96
Massachusetts	100	103	.....	100	90	112	102	110	105	110
Rhode Island	.....	100	.....	.....	.....	100	100	100	110	100
Connecticut	85	96	.....	100	100	103	100	101	104	106
New York	82	87	.....	87	94	104	96	97	97	102
New Jersey	96	91	.....	.....	.....	.....	.....	98	99	99
Pennsylvania	92	92	88	104	100	100	98	99	100	104
Delaware	105	100	.....	.....	.....	.....	.....	85	92	105
Maryland	108	102	.....	.....	.....	.....	.....	97	92	100
Virginia	112	102	.....	.....	.....	.....	.....	96	93	107
North Carolina	104	101	.....	.....	.....	.....	.....	95	95	101
South Carolina	98	101	100	.....	.....	.....	.....	112	112	100
Georgia	84	94	102	.....	.....	.....	.....	136	110	104
Florida	.....	85	.....	.....	.....	.....	.....	109	94	97
Alabama	88	90	.....	.....	.....	.....	.....	104	98	105
Mississippi	75	82	.....	.....	.....	.....	.....	97	94	103
Louisiana	.....	.....	.....	.....	.....	.....	.....	107	103	97
Texas	79	91	99	116	88	113	94	157	99	102
Arkansas	73	89	111	107	85	.....	.....	100	89	100
Tennessee	100	98	98	100	97	98	102	96	89	111
West Virginia	106	103	.....	100	100	.....	.....	100	99	111
Kentucky	92	95	93	85	90	92	81	98	85	97
Ohio	66	76	81	116	103	95	99	102	99	119
Michigan	100	96	97	105	99	106	100	100	100	105
Indiana	66	86	70	.....	.....	95	88	98	96	102
Illinois	78	91	79	88	99	97	97	96	99	106
Wisconsin	77	93	100	95	101	109	99	102	101	108
Minnesota	86	89	.....	110	101	117	101	109	109	102
Iowa	87	94	101	89	97	95	96	104	100	103
Missouri	98	95	92	112	92	106	96	98	99	106
Kansas	108	107	103	96	98	117	102	99	102	108
Nebraska	110	103	.....	104	100	101	99	103	101	102
California	97	101	104	106	107	107	107	102	103	110
Oregon	104	105	98	97	97	100	96	97	92	106

Table showing the condition of the crops, &c., on the 1st day of June, 1876—Continued.

STATES.	CLOVER.		MAPLE SUGAR AND MOLASSES.		COWS.	SHEEP.	APPLES.	PEACHES.	COTTON.	
	Acreage comp'd with last year.	Average condition June 1.	Product of sugar this year compared with last.	Product of molasses this year compared with last.	Average condition of cows this Spring.	How many sheep in every hundred have been lost by disease or other casualties.	Average condition of the crop June 1.	Average condition of the crop June 1.	Average comp'd with last year.	Average condition June 1.
Maine	99	102	91	90	106	5	95	.....	.....	.....
New Hampshire	98	97	87	92	101	4	106	100	.....	.....
Vermont	97	91	86	91	101	6	102	.....	.....	.....
Massachusetts	101	104	103	98	103	4	112	105	.....	.....
Rhode Island	100	105	.....	.....	100	10	125	100	.....	.....
Connecticut	101	99	95	90	101	3	120	80	.....	.....
New York	100	96	93	91	103	5	107	88	.....	.....
New Jersey	98	83	.....	.....	100	6	116	89	.....	.....
Pennsylvania	100	99	104	105	102	5	108	92	.....	.....
Delaware	107	105	.....	.....	100	5	110	20	.....	.....
Maryland	99	98	.....	.....	102	4	101	51	.....	.....
Virginia	104	105	93	91	105	7	92	31	83	99
North Carolina	104	103	.....	.....	104	10	83	48	98	101
South Carolina	101	103	.....	.....	104	6	79	52	99	98
Georgia	103	103	.....	.....	107	10	77	38	94	103
Florida	.....	.....	.....	.....	101	6	57	64	89	82
Alabama	107	101	.....	.....	108	9	72	51	100	94
Mississippi	123	102	.....	.....	105	8	66	27	98	92
Louisiana	.....	.....	.....	.....	101	11	62	38	89	89
Texas	109	106	.....	.....	108	7	74	52	100	90
Arkansas	105	102	.....	.....	105	10	82	16	100	95
Tennessee	108	112	79	87	108	7	89	26	95	93
West Virginia	103	109	99	98	103	4	82	30	.....	.....
Kentucky	123	98	89	90	104	8	81	32	.....	.....
Ohio	105	101	98	101	101	5	105	50	.....	.....
Michigan	106	104	101	100	105	4	124	101	.....	.....
Indiana	100	100	93	104	101	6	87	57	.....	.....
Illinois	102	105	96	93	102	7	92	52	.....	.....
Wisconsin	88	93	81	77	105	5	125	.....	.....	.....
Minnesota	99	95	76	78	107	5	108	.....	.....	.....
Iowa	102	103	85	85	105	5	115	111	.....	.....
Missouri	105	107	77	82	109	8	82	54	78	88
Kansas	113	104	.....	.....	113	4	86	45	.....	.....
Nebraska	128	105	.....	.....	112	8	106	67	.....	.....
California	120	101	.....	.....	103	7	100	122	.....	.....
Oregon	103	100	.....	.....	98	4	101	92	.....	.....

EXTRACTS FROM CORRESPONDENCE.

FARM PROSPECTS.—*New York, Wayne:* Better prospects for all crops never existed.

Maryland, Worcester: Our crops generally very promising, and stock is in good condition.

Virginia, Sussex: While the average in oats and clover is increased from 10 to 20 per cent., the area planted in cotton is 25 per cent. less. In this I think our planters have evinced wisdom, for the balance of their lot-lands is not left uncultivated, but is planted in tobacco, pea-nuts, field-peas, beans, and other crops not hitherto planted to any extent.

North Carolina, Moore: Crops are generally well cultivated, and the season is very favorable. *Transylvania:* Crops are looking well. *Lenoir:* A fine winter and spring for farm-work. The good farmers have their crops well forwarded, and our prospect is very promising. *Camden:* The season has been favorable, the stand of all crops is good, the farmers are fully up with their work, and the prospect for good crops is flattering.

South Carolina, Chester: Labor is plentiful, cheaper than usual, and efficient. Crops will be grown at less expense to the planter than last year. *Marlborough:* The labor is very good and abundant, and the only complaints now are want of provisions and the low price of cotton. *Williamsburgh:* All our crops have done remarkably well, and are in a very promising condition.

Georgia, Liberty: Money is scarce and the times are hard, but the prospect for crops is good, and labor is abundant. *Schley:* Labor plentiful and cheap; $4 to $8 per month, or 10 to 40 cents a day and rations. The crops of corn and cotton look well. *Gwinnett:* Our farmers still have "cotton on the brain," although the price has gone down to 10 cents; but they are paying more attention to provision-crops, hogs, etc. The weather is unusually propitious for the growing crops. *Richmond:* Labor is plenty and cheap, and work is done with decidedly more efficiency than formerly. Prospects for farmers are unusually bright; few could obtain factors' accommodations; hence the crops, when harvested, will, in great measure, remain in the producers' hands, something which has not happened the last ten years. *Hancock:* Less cotton planted than for years, and a larger area of corn and small grain than since the war, which are looking very fine. *McDuffie:* The farmers are turning their attention from cotton, making it only as a surplus crop. The weather is fine for harvesting wheat and oats, which was commenced a few days ago. *Wilcox:* This year farmers have gone less into cotton, and more into grain and potatoes. *Dodge:* A very favorable season for the crops. *Hart:* The crops are in a healthier and better condition than in many previous years. *Troup:* The land was never better prepared for planting; crops have been well cultivated, and are in good condition. *Lincoln:* The season has been as favorable as could be desired; the work is well up, and, on the whole, the prospect is more cheering than for years past. Farmers are beginning to see and feel the necessity of self-reliance and home-support, as shown by the slight abatement of the cotton-crop and the stronger grasp for grain-crops and live-stock. *Jefferson:* Crops are clean, and looking well. More wheat, oats, and corn, and less cotton, planted than in any year since the war.

Florida, Liberty: In the upper half of the county the earth has not

been wet to the depth of 4 inches within seventeen months. Vegetation is, consequently, suffering seriously from drought.

Alabama, Perry: The season is promising, the crop prospects are very good, and the farmers unusually hopeful. *Randolph:* "King cotton" has been king of ruin to farmers. We have no money, but aim to have bread and meat, with which we can live without money. *Russell:* I hear but little complaint of laborers so far. Less stock has been killed and stolen than in any year since the war; owing principally to having better laws, and better men to execute them. The low price of cotton will eventually prove a blessing. It has caused many to plant more corn, potatoes, pease, &c. *Escambia:* All the crops are in very good condition.

Mississippi, Greene: The weather is now warm and vegetation is growing well. The stands are good, there is no complaint of insects, and the crops are looking finely. *Tishomingo:* Laborers are working well, the weather is seasonable, and the crop prospects are above average. *De Soto:* There is considerable attention to stock-raising and grass-growing, and I believe our agriculture will soon change for the better.

Texas, Washington: Many farmers are buying corn at 50 cents per bushel with money obtained from the sales of cotton at 8 cents per pound. No wonder that our southern people are becoming poorer yearly.

Texas, Austin: All grain crops are light, in consequence of a drought of six weeks; no rain from the first week in April until the 21st of May. Pastures have been considerably injured, but stock of all kinds is in excellent condition. The young apple-orchards planted of late years are beginning to bear, but the mild winter kept the trees too long in a growing condition. This has caused all fruit-trees to be very late in blooming, and considerably diminished the amount of bloom. *Fort Bend:* Continued dry weather for ten weeks has blighted agricultural prospects very much in this portion of the State. *Matagorda:* Crops generally are very unpromising. Tremendous floods of rain in February and March—a most unusual occurrence—caused the plowed land to run together again; and then on the cessation of rain, immediately high, drying winds baked them so hard that there was an impossibility to obtain stands. Not a drop of rain has fallen for seven weeks. *Medina:* There was not a drop of rain from the middle of March to the middle of May, which fact reduced the condition of all crops. *Marion:* Not a day's suffering for rain this season, and crops are better than for three years past.

Arkansas, Sebastian: Crop prospects were never better at this season. We are gradually decreasing our cotton-crops and increasing our cereals. Stock is in fine condition, and sheep are healthier here than in any other place I have lived in. *Scott:* The prospects for good crops of corn, cotton, and oats throughout the county are very flattering.

Tennessee, Williamson: Stock of all kinds is looking well. The passage of a dog-law has given a great impetus to sheep-raising. Farmers are getting a better class of sheep and taking better care of them. The seed of German millet, which makes excellent hay, has been quite a profitable crop in this county. Last year it brought as high as $5 per bushel, but this year only 50 to 75 cents. *Rhea:* The prospects for grain, clover, grass, &c., are better than in any season for fifteen years. Stock is in fine order, and in fact everything looks prosperous for the farmer. *Sullivan:* Taking all things together, the outlook for the farmers is very encouraging. *Grainger:* All things considered, we have

more than an average prospect for crops. *Knox:* Complaints of bugs, worms, &c., are fewer than usual; the spring has been exceedingly favorable to the farmer, and while he may fail in some of the crops he can reasonably hope for a bountiful harvest.

West Virginia, Tucker: A great interest is taken this spring in putting in crops; more grain has been sown than for several years past, and crops of all kinds look well.

Ohio, Madison: All small grains, except oats, are almost a failure.

Michigan, Delta: For the last two weeks the weather has been all that could be desired, and everything in the line of crops is looking well. *Wayne:* The past few weeks have been very favorable, and crops of all kinds are looking remarkably well.

Minnesota, Douglas: We never had better prospects of a large crop of grain. *Sherburne:* All crops except winter grain are in a splendid condition. *Wabasha:* The very late spring and wet condition of the ground impeded seeding; after seeding, heavy rains washed badly the rolling lands and left many farms in poor condition for crops; never since the settlement of the county have crops so early in the spring been damaged so badly. *McLeod:* More than twice as much land as usual will be broken this spring; the abundant crop and good prices of wheat last season greatly encourages farmers. *Renville:* Crops are farther ahead than ever before at this season of the year. *Stearns:* At no time since our settlement in this State has the season been so early for seeding or the weather so fine for the growing grain as at present; crops never looked more promising. *Todd:* This is the best growing season for small grains for ten years.

Iowa, Dallas: We have had a very wet spring. Previous to the 15th of May we had such frequent rains that it was almost impossible to get the ground in suitable condition for any crop. Consequently a diminished area of wheat, oats, and barley was sown. *Woodbury:* Farmers are giving less attention than heretofore to wheat, and an immense acreage, from new breaking of prairie, is devoted to corn, an increase of 25 per cent. in this county. *Marion:* Much less than usual of spring-wheat, oats, and barley was sown, as it was impossible, owing to wet weather, to sow at the proper time. *Des Moines:* The ground is in the worst condition for making crops ever known. The past winter was characterized by a succession of very heavy rains, and no frost to disintegrate the soil. The result is a very poor show for small-grain crops. I have seen no field of small grain that has over half a stand, and the ground is nearly as solid as the road. *Fremont:* We never had so great an acreage in small grain as this spring, and the prospect was never better. *Pocahontas:* The season is very favorable for crops of all kinds.

Nebraska, Franklin: The weather has been very seasonable and there never was a better prospect for crops in the county since it was settled. *Adams:* There are no indications of grasshoppers, and the condition of all crops was never better. *Richardson:* A splendid prospect for good crops, especially of small grains. The chinch-bug has appeared in a few localities. *Wayne:* The prospect for good crops of small grain was never better. *Dixon:* No grasshoppers yet, and crops of all kinds are in good condition and promise first rate. *Dawson:* The prospects for everything were never better since the county was settled. *Knox:* Showers have been frequent and all the small grains are in splendid condition. *Cuming:* The prospects for small grain, though late, were never better. Corn has an excellent color and has a good start. *Seward:* The weather has been very seasonable and a more hopeful condition of crops could not well exist. A marked improvement in husbandry

is observed. *Nemaha:* Everything is as auspicious and encouraging as could be desired except the fruit, which was badly beaten off by hail.

California, Sonoma: The high percentage reported on all cereal crops is owing to the fact that the present season has never been equaled since the settlement of California by the Americans. The yield of wheat and barley will be unprecedentedly large; the acreage of corn is very largely increased, and the yield will be proportionably large. The pastures are better than for twenty years, and dairymen are reaping a rich harvest of golden butter. Fruit promises to be very abundant; the vintage gives promise of being exceedingly large and of excellent quality. *Napa:* The grain-crops are all above average, both in acreage and yield per acre.

Utah, Weber: The season was very late and nearly all spring crops are backward, but all cereals are very promising and stock is improving rapidly after the unusually long and tedious winter. *Toole:* We never had a better season, and everything looks splendid; prospect of the heaviest crops since the county was settled.

PROGRESSIVE AGRICULTURE.—*North Carolina, Beaufort:* This county has made one good step in the right direction. Formerly large quantities of northern hay were imported; but for the last two years the supply of forage from home production has been abundant.

Indiana, Switzerland: The policy of hay-cropping without giving the land anything in return is being gradually but surely abandoned, and farmers are taking steps to convert their farms into stock-farms. Raising and fattening stock will be extensively engaged in hereafter. There is now an unprecedented and still increasing demand for stock-cattle, hogs, &c.

Wisconsin, Columbia: Our farmers are turning their attention more and more every year to cultivated crops, and by feeding their corn to cattle, sheep, and hogs, make more manure to return to the soil as a compensation for its favors.

Minnesota, Pope: Although the winters are so long and generally so severe, the raising of herds of cattle and flocks of sheep is found on the whole to pay better than the production of wheat, corn, and oats for the market Dairying prospects begin to look encouraging. The manufacture of butter and cheese will soon greatly increase, judging from present indications.

Kansas, Washington: The alfalfa sown last year has proved a grand success. It was three feet high by the middle of May, and farmers then commenced cutting the first crop. The attention now given to alfalfa and other grasses will revolutionize farming in Kansas. Before its introduction we made a specialty of our wheat to our own detriment. We are now raising more rye, corn, and grass, and selling our products in cattle, hogs, &c., which places us on the high-road to prosperity.

IMPOVERISHING RESULTS OF SPECIAL FARMING.—*Kentucky, Pendleton:* Tobacco is the curse of this county. It is causing the lands to become quickly worn out and the rising generation to be a set of ignoramuses.

Tennessee, Perry: With a soil and climate exceedingly well adapted to the growth of cotton, tobacco, all kinds of fruits, the cereals, and all kinds of stock, thereby guaranteeing the greatest meed of success in diversified husbandry, and a large, navigable river traversing our western border, affording the very cheapest transportation to first-class markets, we have too long made the growing of peanuts a specialty. The growing

of this crop has driven us to the granaries and meat-houses of the Northwest for our subsistence, has destroyed our thrift, is threatening to destroy the fertility of our soil, and has otherwise damaged us far more than the calamities of our late civil war; and yet it is planted this year in an increased acreage of, perhaps, 200 per cent. above an average. A few farmers, educated in the precepts of diversified husbandry, would soon grow opulent here in furnishing our farmers with breadstuffs, meats, fruits, vegetables, wool, and farm-stock.

GRASSHOPPERS.—*Texas, Burnet:* Cereals have been partly destroyed by grasshoppers. *Gillespie:* The grasshoppers hatched here, left on the 8th of May. *Llano:* Wheat has been considerably damaged by the grasshopper.

Minnesota, Watonwan: Grasshoppers deposited eggs here last fall, which have now hatched, and the young hoppers are very plenty in places, but up to this time they have not done any material damage to the growing crops. Owing to the fear of this pest, less than half the usual acreage in wheat and oats was planted this spring. *Jackson:* Owing to the deposit of grasshoppers' eggs last season, but little grain was sown in the north part of the county this spring. *Nobles:* In three towns in the northeast part of the county young grasshoppers have already done considerable damage where the ground was not plowed in the fall, and where the grain was sown in corn-stubble the crop is wholly destroyed. *Redwood:* Crops of all kinds promised a bountiful yield; but the great pest, the grasshoppers, are hatching out in certain localities, and threaten total destruction. *Blue Earth:* In the southwestern towns of the county grasshoppers are hatching out in large numbers. They are already doing considerable damage to all kinds of grain and to timothy meadows.

Iowa, Shelby: Wheat is suffering from young grasshoppers; in some places they have entirely destroyed it, but as yet not more than 2 per cent. of the acreage.

Colorado, Rio Grande: Grasshoppers are hatching out in large numbers.

Montana, Deer Lodge: The grasshoppers are out by millions, and damaging spring crops, wheat more than any other. *Lewis and Clarke:* Grasshoppers are appearing very plentifully. *Jefferson:* The grasshoppers very thick.

New Mexico, Taos: The grasshoppers have appeared in this valley in myriads. *Mora:* Grasshoppers have destroyed 40 per cent. of the spring wheat.

DISEASES AMONG FARM-ANIMALS.—*North Carolina, Gates:* Nearly all the hogs are dead or dying of hog-cholera.

Georgia, Decatur: There has been some fatality among the horses. It seems to be staggers, produced by the kind of food given them. Corn raised here last year is very light, chaffy, and deficient in the elements of nutrition. In this county such food is a recognized cause of blind staggers. A few persons lost every horse. Hogs have continued to die of the disease known as hog-cholera. It is said that hogs fed mainly on cabbage, colewort, ruta-bagas, and turnips are not subject to this disease.

Arkansas, Prairie: Since my last report we have lost fully half the hogs we had left. I have no doubt that the disease was from worms, and that with ordinary care very little loss would have been sustained. Not enough hogs are left for stock.

Tennessee, Monroe: A few sheep are dying of disease. Cholera prevails among swine, proving fatal in many localities.

Illinois, Macoupin: More hog-cholera than for the past three years.

Kansas, Woodson: A disease called the strangles is prevailing in several localities, which has killed a number of fine horses. The first symptoms are manifested by an itching of the head, which causes the horse to rub the head and neck violently against anything within reach. This is soon followed by a swelling in the muscles of the jaw, which extends upward until the lower jaw and throat are tightly swollen. The horse begins to strangle, as though choking, and grows worse for about five days, when he ceases to breathe. No one seems to understand the disease, and no remedy has yet been discovered.

INSECT-INJURIES TO APPLE-TREES.—*Alabama, Saint Clair:* This spring, on a number of apple-trees, a short time after the bloom appeared, a small insect, like a black flea in appearance, bored into the limb near the bloom and deposited its eggs. This caused the bloom to perish, and the limb died back from 4 to 12 inches. The trees thus injured look as if almost dead, there are so many dead leaves hanging to them. The borer confined itself principally to certain kinds of fruit. This is the first thing of the kind we have ever had.

OVERFLOW.—*Louisiana, Concordia:* From careful inquiry, I think at least three-fourths of this parish is under water. At date, May 21, it has fallen 10 inches, but goes down very slowly. In the back part of the parish there will be a good deal of suffering.

NEW VARIETY OF APPLES.—*Austin, Texas:* A new variety of apples has originated on the farm of Dr. Becker, of Frelsburgh, which is propagated by suckers, and succeeds admirably. The trees perfected a second crop last winter.

FATALITY AMONG DOGS.—*Tennessee, McMinn:* Farmers are paying more attention to sheep since the law has passed taxing every dog $1 and every slut $5. An affidavit to the death of a dog pays the tax on him, and there have been about 150 affidavits filed with the county collector for 1875.

A STOCK COUNTY.—*West Virginia, Greenbrier:* This county is better adapted to stock-growing than to grain. Cattle, sheep, and horses are extensively raised. We sell annually about 3,000 fat cattle, averaging 1,100 pounds, at 4½ cents. Stock of all kinds are now in good condition, and promise to get fat early.

RAVAGES ON SHEEP.—*Mississippi, Winston:* I turned out my sheep last spring and lost two-thirds of them; this spring I turned out my flock, and within one week all my lambs disappeared—killed by wolves or dogs. The sheep are diminishing every year; the farmers have almost given up raising them. One of my neighbors, who has generally kept 75 to 100, told me, three days ago, that he had only 2 left—all killed by dogs, wolves, or freedmen.

Georgia, Hall: Since the war, sheep-raising has proved a failure. This is a good sheep-growing county, but the freedmen seem determined that dogs shall monopolize it. Before the war I kept a fine flock of about 100; now I have none—have been compelled to quit by the dogs, the poor white man, and the negro.

HAIL-STORMS.—*New Jersey, Sussex:* On the evening of May 21, we suffered terribly in several parts of the county from a storm of hail and rain. Some of the hail-stones were of the size of a small hen's egg. Glass in windows of church, conservatories, &c., suffered very much. The leaves were stripped off the trees, gardens were ruined, roads washed out, and bridges destroyed.

Nebraska, Knox: A very heavy hail-storm, May 20, passed through this county from the southwest. The leaves and some of the bark of the trees were removed; all the garden vegetables and flowers were totally destroyed; all the plants from the tree-seed obtained from the Department were also destroyed; the grass and small grain were cut short, but I think were not permanently injured. The ground was covered about 2 inches on the level with stones of a large size. Prairie chickens and birds after the storm were found dead.

THE EUCALYPTUS—*Florida, Orange:* I have now 15 varieties of the eucalyptus growing finely. Our soil and climate seem to suit them exactly, and no doubt in time they will become most valuable as shade and timber trees, to say nothing of their medicinal or anti-febrile properties. Seeds of the *Eucalyptus globulus*, received from the Department one and a half years ago this month, have made trees 23 feet in height and six inches in diameter.

IMMIGRATION—*Michigan, Chippewa:* Many farmers are coming into our county from Canada. Though generally poor, we hope the resources of the county will soon be brought up, at least toward the desired standard. There are not yet over fifty farmers in the county.

Minnesota, Chippewa: Thousands of claims are being located this spring, and soon Western Minnesota will be one immense wheat-field.

CROSS-BREEDING OF GRAIN.

BY THE COMMISSIONER.

In this age of enterprise and thought, when science is casting so much light upon the operations of men, and when the study of the best and most profitable modes of performing the work of the world is becoming more essentially necessary to the production of successful results, the farmer is especially called upon to bestow industrious thought as well as laborious labor upon the work which he is daily called upon to perform. It is not enough that he should know that seeds cast upon the earth will germinate, grow, ripen, and produce fruit, but that his hand, which guides, aids, and stimulates this natural process, should itself be guided by the knowledge of the nature of the seed itself, how it germinates, how it grows, how it ripens, and how and why it produces fruit. This knowledge will enable him to give a right direction to the effort and labor which he bestows upon it, in order to obtain the most profitable results. The thought and conviction that frequent plowing and stirring of the soil is important to its fertility, because the earth itself is a set of mouths and lungs which feed upon the natural elements of the air, and imbibe its moisture and light and heat, induces him to the performance of the work in the promotion of his own interest. That seeds are characterized by good and bad is a thought which should always lead to a careful selection, for as like will, throughout all nature, produce like, so will the hopes or fears of the farmer be realized by the character of the seeds he sows or the tree he plants. A small and shriveled grain of wheat, when sown, will produce a weak and unhealthy stock, and a corresponding failure of product, while a plump, bright grain will exhibit its healthy and vigorous growth and abundant product. It is certainly true that many of the maxims of farmers, upon which they thoughtlessly base their action, have no foundation in sound

reasoning. That to change seed from one kind of soil to another will produce a profitable result is a maxim of almost universal acceptation, nor does the farmer stop to reason with himself as to its soundness or fallacy.

Here is the point at which farmers fail to bring into requisition their own powers of reflection, or even to use the evidence of their own practical experience. They do not stop to inquire as to the effect of removing seed from a soil and climate to which it has been naturalized and adapted, to that, to which it is not natural and to which it has not been accustomed; and they fail to remember that when they go abroad for seed, and pay a higher price for it, it is to obtain a quality better than their own, and commensurate with the price they pay for it, and that herein lies its superiority; that it amounts to nothing more than an imperfect mode of selection.

Another maxim which farmers generally accept as an axiom is, that by sowing wheats of different qualities together, that they will so hybridize as to produce a mixed breed; while even a little observation would teach them the error of this conclusion, and that each grain produces its own like, and that really no hybridization takes place at all, and that the mixture of seed produces the unmitigated evil of mixing wheats which perhaps ripen at different periods, or perhaps require different treatment when they come to be reduced to flour.

A little study of the nature of plants would seem to be necessary to a knowledge of their proper treatment during their growth. Of the flowers of plants some are male and some female. In some the staminate and pistillate flowers occupy different parts of the same plants, as in Indian corn. In the larger number of plants the male and female organs mature at the same time in the same flower; and of these some are subject to self-fertilization, and others to cross-fertilization. Such plants as pease, beans, wheat, and barley have the male and female organs within themselves, and are not subject to cross-fertilization, and therefore it is that wheats do not mix their qualities at all by being planted together; and as it is objectionable for other reasons, it should never be done. The leaf or flower which protrudes from the glume of wheat is neither an anther, a pistil, nor a stamen, and neither emits nor receives the fertilizing pollen.

CHEMICAL MEMORANDA.

By William McMurtrie, Chemist.

Bat guano.—In a previous report of the Department I had the honor to submit the results of an analysis of a sample of bat excrement taken from a deposit near Huntsville, Ala., and the interest manifested in them, and the reports of other deposits received, from time to time, seemed to render it advisable to issue a circular-letter to the regular correspondents of the Department in the South, asking for information concerning the existence of such deposits, with complete descriptions of their location and extent. To these letters we have received replies of a very favorable character, many of them being accompanied with samples of the deposits described, developing the fact that the deposits were not confined to any particular section of the South, but that they exist in many of the States from Virginia to Texas, several of

them being of considerable extent. It was believed by many persons before the war, and by officers of the confederate government during the war, that they would prove to be a valuable source of niter, and were worked for the extraction of this compound. Some of the attempts in this direction proved successful, but very many of them resulted disastrously, as might be expected from the low percentage of nitric acid in some of the samples, and its complete absence in others, and, at the close of the war, all enterprise in this direction was abandoned. They will, however, be a profitable source of fertilizing material, since their mechanical condition is favorable to their ready removal and application to the soil. Most of them contain fair percentages of organic nitrogen, while some of them contain both actual ammonia and nitrates. Microscopical examination of the material shows it to consist of the remains of the hard parts of insects in a finely comminuted condition, which are the source of its nitrogenous constituents. Many of these remains are in such a fair state of preservation that the species of insects to which they belong may be determined.

Before proceeding to further descriptions of the samples received by the Department, and a statement of their analysis, I will detail some of the information concerning the deposits, as furnished by our correspondents.

Mr. J. Layne, McDowell, Highland County, Virginia, reports caves containing deposits on the lands of the following gentlemen: John T. Armstrong, 2; Samuel Armstrong, 2; Jonathan Lirons, 1; H. C. Jones's property, on Cave Mountain, 2 or more; on property of James Woods, on Jackson's River, 1. Mr. Layne states that from all of these caves large amounts of saltpeter were made during the war, and vast quantities of fertilizing material could be obtained from them at any time.

Mr. R. E. Talbot, Georgetown, Williamson County, Texas, sent samples of deposit, with the following statement: "I inclose a sample of bat excrement from the cave of William K. Foster, two and a half miles from Georgetown. The amount of the deposit is large, supposed to be hundreds of tons. Many apartments of the cave are filled to the mouth, making it impossible to tell how extensive the cave is, or the amount of excrement in it. For a space of about 100 yards long by 20 yards wide, near the mouth, it is from 6 to 10 feet deep."

Mr. S. B. Thornton, Tuscumbia, Ala., reports "a deposit in a cave three miles west of that place, worked by a gentleman, who considers the deposit worth $20,000. The cave is 80 or 90 feet deep. Material from it has been tried upon corn with very favorable results."

Mr. Hugh J. Brady, Spencer, Tenn., sent a sample taken from an extensive deposit found in a cave, one division of which "measures one mile in length and 50 feet in width. This is the main room. The cave has been surveyed for a distance of three miles. A New York company manufactured saltpeter from the deposit for a number of years, but finally failed." The deposit is believed to be of great value.

Mr. H. Weir, San Antonio, Tex., writes:

> I sent you by express October 26, one can of "bat guano," containing about ten pounds, taken from my cave, about twenty miles northeast of this city. There is a large deposit in this cave, say fifteen or twenty thousand tons, and yearly increasing. I should be pleased to get your analysis of this sample, and will cheerfully give you any further information you may desire with regard to this cave, or others in this section.

Mr. William H. Bayne, postmaster at Batesville, Ark., reports one cave in his vicinity which contains a large deposit of bat excrement, and is at present the resort of immense numbers of bats.

Mr. P. A. Kendrick, Brierfield, Bibb County, Alabama, reported a

cave on Six Mile Creek, in Bibb County, and, in response to a request for a sample of the deposit, sent it with the following communication:

In reply to your favor of September 9, I would say I have visited the cave in question, and forward by to-day's mail samples of excrement of bats and dirt from the floor of the cave. This material was used by the confederate government during the war, for manufacture of saltpeter. Both the dirt and the excrement are found in large quantities.

The entrance to the cave is 10½ feet high and 20 feet wide. Thirty feet from the entrance the interior is about 15 feet high, and here commences a series of rooms containing the dirt and manure. A tram-road, used by the confederate government, runs a quarter of a mile into the cave, but beyond this it has never been explored. Its extent is, therefore, unknown. It is in a limestone formation, and situate seven miles from the Selma, Rome and Dalton Railroad, and half a mile from Six Mile Creek.

Mr. J. A. V. Pue writes from Bandera, Tex.:

In reply to circular of May 27, 1875, I have the honor to state that there is a bat cave situated on West Verde Creek, about 8 miles southwest from Bandera, on a survey belonging to Joseph Ney. During the war large quantities of saltpeter were manufactured from it for a time, when it was fired accidentally or designedly. It is now a mass of ashes, from 3 to 5 feet in depth, as far as it has been explored—a distance of about 400 yards. The width of the cave is from seven to thirty feet. The deposit has never been used for agricultural purposes.

Subsequent to the time of writing the above, Mr. Pue forwarded, by request, to the Department a sample of bat excrement of fair quality, as is evident from the statement of analysis given below.

Besides the sources already mentioned, we have received specimens from Mr. L. A. Downs, Cave City, Ky., and from Benton County, Arkansas. We have made analyses of seven of the specimens received, and their composition is detailed in the following table:

	I.	II.	III.	IV.	V.	VI.	VII.
Sand, clay, insoluble silicate	1.068	82.29	0.46	2.153	1.885	0.447	62.660
Moisture	36.300	2.59	9.17	26.710	44.330	0.425	14.020
Organic volatile matter	46.77	.....	82.18	58.439	47.73	92.745	6.144
Alumina and sesquioxide of iron	0.356	8.06	0.17	.....	0.463	.....	.....
Soluble phosphoric acid	0.541	} 2.02	{ 1.52	0.125	1.833	1.691	.....
Insoluble phosphoric acid	3.000	}	{ 0.67	3.866	0.581	0.909	0.711
Lime	6.428	2.92	1.86	.....	0.710	.....	.....
Magnesia	0.666	0.38	0.38	.....	Trace.	.....	.....
Sulphuric acid	.....	0.61	1.16	.....	2.161	.....	.....
Chlorine	.....	Trace.	0.38	.....	0.202	.....	.....
Nitric acid	.....	.....	Trace.	.....	0.258	.....	.....
Potassa	1.590	Trace.	0.67	1.471	0.590	0.763	0.0707
Soda	0.750	Trace.	Not det.	0.425	0.312	0.160	0.152
Soluble silica	.....	0.41	.....	.....	.....	.....	.....
Organic nitrogen	5.336	.....	7.96	0.556	6.000	10.091	0.199
Amonia (N. H.) corresponding to organic nitrogen	.....	.....	.....	0.675	7.28	12.253	2.2416
Actual ammonia	0.528	.....	1.24	0.132	2.013	0.472	.....
Undetermined	1.531	.....	.....	6.511	.....	.....	.....

The Roman numerals, at the top of the tables, represent different samples as follows:

I. Sample from Brierfield, Ala. Part of the deposit from which it was taken was burned during the war, but this sample represents that portion which remains uninjured.

II. Sample from same deposit representing the remains of the burned portion. It has the appearance of dry, sandy soil.

III. Sample from Bandera, Tex.

IV. Sample from San Antonio, Tex.

V. Sample from Benton County, Arkansas.

VI. Sample from Georgetown, Williamson County, Tex.

VII. Sample from Cave City, Ky.

These are all very similar in appearance, with the exception of those

containing the high proportion of insoluble mineral matter, which are very much like soil. Those containing high proportions of organic matter vary in color from light brown to dark brown according to the percentage of moisture they contain. As stated before, their physical condition, when air-dried, is excellent, both for handling and for application to the soil, and the analyses given above represent very fairly the average composition of the material, which may be valued at from $15 to $55 per ton, reckoning upon the basis for determination of the value of fertilizers adopted by Dr. Ch. A. Goessmann, inspector of fertilizers for the State of Massachusetts, in his report for 1876. These values compare favorably with those of the fish-products largely manufactured in New England, and even with Peruvian guano, analyses of both of which may be found in the report just alluded to. With these facts before us we may readily recognize the importance of the development of these deposits in the South, where fertilizing materials are so much needed and are so costly, and especially is this true when they may be obtained from this source for the mere cost of removal.

INFLUENCE OF LIME-SALTS IN PLANT-GROWTH.—Joseph Boehm has lately conducted a series of experiments to determine the value of lime-salts in the economy of plant-growth, and has found that its principal function appears to be that of furnishing nourishment for support of the development of the cell-walls, without assisting in any way in the direct production of starch. According to the results obtained by other investigators, the function of the formation of starch in the chlorophyl-grains must be delegated to potash. This latter function cannot, however, according to Boehm, be carried on in the absence of lime-salts, since plants grown in potassic chloride, carbonate, or phosphate alone grew no better than those to which only distilled water was supplied. Germinating plants will grow as long as they can obtain nourishment from the reserve stock of food in the parent seed, but it appears that the mineral elements become exhausted before the organic elements are all elaborated, and that, for complete development of the plants, mineral matters must be added to the soil or solutions in which they are grown. Experiments with various alkaline salts, in absence of lime, proved them to be unable of themselves to supply the deficiency, and in many cases they were absolutely poisonous. This was found to be true of carbonate of magnesia, confirming the results of an investigation into the physiological action of magnesia, made in the laboratory of this Department. The poisonous action of magnesia-salts may, however, be neutralized by carbonate of lime.

But when the alkaline salts were applied in presence of lime, the growth was vigorous and healthy, and he therefore believes that lime-salts are as essential to the change of starch to sugar, &c., in building up cell-walls which constitute the skeleton of the plant, as it is in the animal economy in the metamorphosis of the cartilage of the bones.

With regard to the value of potash, the author quotes from Nobbe that potash is essential to plant-growth, and that it is a condition of the formation of starch in the chlorophyl-grains. The chloride is considered the best form in which to apply it to the soil, and next to this compound the nitrate, while the sulphate and phosphate are considered positively injurious.

From these statements it would therefore appear that the combination of lime-salts with potash-salts is the most favorable combination for the stimulation of the growth of plants.

MICROSCOPIC OBSERVATION.

By Thomas Taylor, Microscopist.

Cellulose and Starch in Plants and Animals. (Continued from the July Report for 1875.)—As cellulose and starch have very important relations to man and the lower animals as food-constituents and in other respects, I have deemed it advisable to continue my investigations on these substances.

1. Fig. 1 represents a fiber of cotton in its natural condition; 2, a fiber subjected to the action of strong sulphuric acid; 3, a fiber on which was first placed a drop of a strong amber-colored solution of tincture of iodine, followed by a drop of commercial muriatic acid, and immediately afterward by a drop of concentrated sulphuric acid. In consequence of the combinations of the sulphuric acid with the water of the muriatic, the liquid boils two or three seconds, and by this chemical action the cellulose or cotton-fibers are quickly changed in their structure and chemical composition. When viewed under a power of about 100 diameters, the fibers will be found to have been reduced to a starchy condition, and in many cases will appear in the form of disks or beads of a well-defined blue color; 4 represents a fiber of flax in its natural condition; 5, when treated with concentrated sulphuric acid; 6 and 7, when acted on by the tincture of iodine and acids, as described in the case of cotton-fibers. Membraneous cellulose and also amorphous may be stained blue in the same manner, but they retain their original forms. To illustrate this, saturate a few grains of bleached flax in commercial muriatic acid, then add, by degrees, concentrated sulphuric acid, and stir the mixture with a glass rod until the mass becomes pulpy or partially dissolved; then add to it an excess of water and let it stand for several hours to allow the cellulose to precipitate, after which decant off the clear water. This process of adding water or washing must be repeated several times, or until the solution has no acid taste, when the pulp will be ready for future experiment. If a portion of the pulp be viewed by a power of about 100 diameters, it will be seen to consist mostly of amylaceous precipitated matter, (amorphous,) void of organic structure, combined with partially-dissolved flax fibers. If it be ground with a glass spatula and viewed again it will be seen that the only change effected is the reduction of the size of the particles of flax, no starch-like bodies being observable; but if there now be added to it one drop of the tincture of iodine, one of muriatic and one of suphuric acid, blue globular and starch-like bodies will be formed from the undissolved flax. That portion of the flax-fiber which was rendered soluble in the acids and precipitated on the addition of pure water, is amorphous cellulose, and remains structureless. If the pulp so treated be ground again with a spatula while combined with these solvent acids, a much greater variety of these globular bodies will appear. Rotation and a solvent solution are all that is necessary in this case to produce these artificial starch-like granules in abundance. It will be observed that these amylaceous granules are formed from two distinct causes. The first mentioned results from the expansion of the disks described, and the second from the action of the soluble acids, assisted by the rotation of the partially-dissolved flax particles.

The spiral cellulose vessels of the ovaries of the blossoms of fruit and tender leaves of the beech are stained purple and sometimes pale

Fig.1.

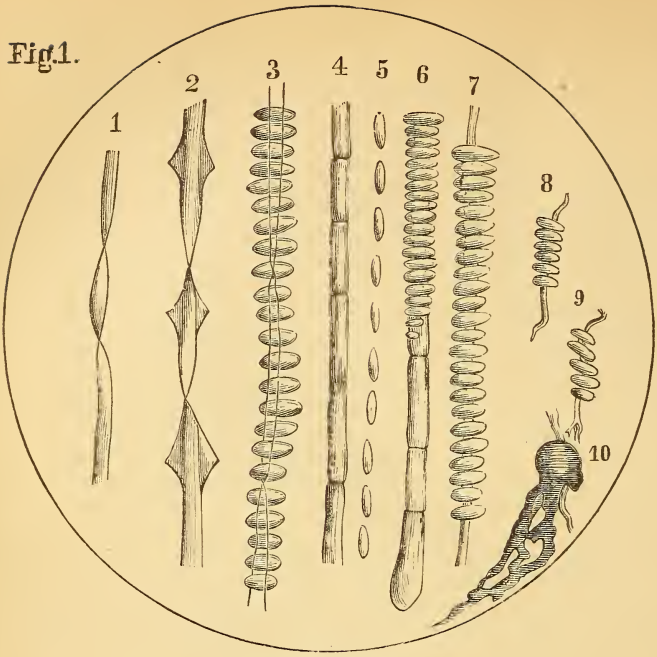


Fig 2

Animal and vegetable cellulose and starch.

blue: but those of fruit-tubers and matured foliage are stained brown. The first is of the amylaceous, the second of the woody type. The larger proportion of the cellulose structure of the nutritious fruits, foliage, and grasses, is easily converted into starch and ultimately into sugar, by chemical means, and by animals when used as food, and are known as carbohydrates. The mycelium of mycroscopic fungi consists, for the most part, of cellulose, and although the fungi are very low forms of plant-life, they are not only the principal formers of some of the organic acids, as the acetic, but they grow to maturity in them; while the woody cellulose of the higher plants dissolves in the acetic ferments and becomes food for the cryptogams. Some varieties of mycelium take the blue stain by iodine and sulphuric acid, while other kinds are turned of an amber-color by the same tests.

When gun-cotton, a nitro-cellulose body, is treated very frequently with the iodine and acid. tests, as described in the experiments with cotton and flax, it becomes yellow or amber-colored; and when the fine saw-dust of box-wood is similarly treated, it appears, when viewed under the microscope, of three colors, amber, green, and blue; but the latter color appears in very small quantities. Chitine, the cellulose of insects, is stained yellow, and is supposed by some chemists to be combined with nitrogen. Color cannot be relied on wholly as a test for cellulose, since it assumes so many colors under treatment with iodine and acid. The following colors are frequently observed when treating cellulose and starch with iodine and sulphuric acid: Purple, bluish-purple, green, yellow, amber, reddish-amber, pale-blue, deep-blue, and a translucent amylaceous white. When starch is acted on by sulphuric acid alone it dissolves and is partially carbonized.

In making investigations on animal tissues, viscera and blood, I have endeavored to ascertain the condition of the cellulose in them, whether it is tubular, membraneous, or amorphous. If a portion of brain is bruised and combined with iodine and the acids mentioned, so as to produce the boiling heat, amber, purple, and blue colored forms are frequently seen, particularly so when the brain of a herring is used in the experiment. Angular plates are always seen in the brain of the calf, and are without color until subjected to the action of iodine and suitable acids, when they become blue. These plates have been by some writers termed cholesterine, but there is no chemical authority that I can find which declares that cholesterine is turned blue by the cellulose and starch tests. In my experiments on the heart, liver, muscles, &c., of the higher animals, I never fail to detect structural cellulose in them. 8, 9, and 10 represent some of the forms found under chemical action; I, Fig. 2, is similar; 2 and 3 and the other form of this plate are produced from 1 by using extra acid, and sometimes by slight friction. In animal tissues and viscera a great variety of cellulose and tubular forms may be detected in various stages of color, which are not represented by the cuts. To be successful in these experiments a great deal of perseverance is necessary, as the animal cellulose is well protected by the other substances present, which frequently resist the tests applied until they are repeated several times. Fresh animal tissues, viscera, &c., should be used in making preliminary examinations.

Since writing the foregoing, I have made some new experiments on human arterial blood taken directly from an artery, and also on the mixed blood of a fowl. In each case well-defined amylaceous matter has been detected.

The fresh blood of a fowl was whisked with a fork to separate the fibrine from the liquid portion. The fibrine was next dissolved in dilute

caustic potash, to which was added acetic acid until the precipitate ceased to form; a portion of it will ultimately float on the top; remove a portion of it by means of a clean glass rod, and place it on a microscopic slide; add to it one drop of transparent solution of tincture of iodine, followed immediately by one drop of concentrated muriatic acid; then examine it carefully under a power of about 150 diameters, for starch, if it is present, will appear in granules of a blue or purple color. At this stage of the process these chemicals will not convert amylaceous cellulose into starch, even if present. To this same mixture add one drop of concentrated sulphuric acid; place a glass disk over the contents, and blue amylaceous matters in various forms will probably be found; but should there be an entire absence of blue color, and opaque brown particles appear, remove the disk and apply the chemicals again as before. Should too much sulphuric acid be employed the whole coloring mass will be dissolved. The amylaceous matter present at the same time appears, when superfluous sulphuric acid is used, in white translucent bodies, dissolving in streaks; but the proper admixture of iodine solution with muriatic and sulphuric acid will give the desired results. Many experiments will need to be made by microscopists before sufficient expertness and satisfactory results can be obtained. That portion of the blood which remains after the fibrine has been removed from it has been examined for starch granules, but none were found; when tested for amylaceous cellulose a trace of it appeared. I conclude, as a result of hundreds of experiments, that amylaceous cellulose is combined with the fibrine of the blood, arterial and veinous, and may be detected in even a minute portion of it, in the manner described.

FACTS FROM VARIOUS SOURCES.

The Swartz system of butter-making.—The Department of Agriculture is indebted to the Secretary of State for a copy of a recent dispatch from the minister of the United States at Stockholm, Hon. C. C. Andrews, containing an interesting description of the process known as the Swartz system of butter-making in Sweden. This system has given to Swedish butter a high reputation in European markets, but is little understood, probably, in the United States. The dispatch, which contains also some additional facts concerning Swedish butter-making, is here given in full, as furnishing statements and hints which will be of interest and value to the dairy industry of this country:

SIR: The Swedish ice-water system of setting milk, now in general use in this country in butter-making, and known from the name of its inventor as the Swartz system, was described in 1872 in an article by Mr. C. Juhlin Dannfelt (now Swedish commissioner at the Centennial Exhibition) in the journal of the Royal Agricultural Society of England, which article was also published and circulated in pamphlet form. The system has been described more recently by Mr. H. M. Jenkins, Secretary of the Royal Agricultural Society of England, in his very full report on the agriculture of Sweden and Norway, which was published last year. From inquiries, however, which have lately come to me from the dairy region of the State of New York, it would seem that this system is not popularly understood in the United States, wherefore I beg in this dispatch to note its principal features.

The milk is placed, as soon as practicable, in iron or steel pail-shaped cans, which have been thoroughly tinned, inside and outside, and which have a diameter of eight or nine inches and a depth of twenty inches. These, having each a close-fitting cover of gauze, are set about a quarter of a foot apart, in ice-water of a temperature of 35° Fahrenheit. To obtain and preserve this low temperature the ice needs to be cut into pieces only two or three inches thick. The surface of the water is about on a level

with the surface of the milk. The cream rises in course of ten or twelve hours. It is churned sweet, and at a temperature, when beginning, of 58° to 62° Fahrenheit. This, in brief, is the ice-setting system: and its merits appear to be in the saving of time and in the maintaining the mastery over the cream in all temperatures.

In this connection, possibly a few additional facts as to Swedish butter-making will be of interest.

It is usual, at the factories, to add before churning some drops of a coloring-fluid, but of course the butter is in reality the worse for it; and I am sure that for family use here the preference is given to private dairy butter which has no artificial coloring. The churns in general use are barrel-shaped, placed vertically. In the factories the churns are of different sizes, say from thirty to one hundred gallons capacity, with a cylinder dasher, which has two vertical wings, and is moved by steam at the rate of about one hundred revolutions per minute. The butter is obtained on an average in about 45 minutes. It is worked by a machine which is an American invention, with, as is claimed, some Danish improvement. The mechanical working of butter is the only new feature which has been introduced into Swedish butter-making since the publication of Mr. Juhlin Dannfelt's above-mentioned article. About 5 per cent. of salt is used for a distant market. The butter is packed in water-tight beech casks holding about one hundred pounds each. The practice now is not to use brine in preparing them, but merely to let them stand full of cold water twenty-four hours before receiving the butter. They are all new when used, and cost here at the rate of forty cents, gold, each.

Butter can be shipped from Stockholm to London, via Hull, in as short a period as four days, but actually it takes eight days and sometimes longer, because the steamers which take it from Gothenburg direct are generally four days at the London dock before the butter is delivered. The circular of Thomas Nesbett & Co., of London, under date of the 3d instant, quotes American and Swedish butter at wholesale as follows: American fine, 26 cents (gold) to 27 cents per pound; Swedish extra, 33 cents to 34 cents per pound; and Swedish fine 30 cents to 32 cents per pound. There were no quotations of American extra.

The favorite stock of cows in Sweden is short-horns crossed with Ayreshire. But short-horns mixed with common stock are more frequently to be met with. There is also some Holland stock. In the best-managed dairies the yield of milk per cow will average about 700 gallons a season. It has been found that 2.65 gallons of milk yield .46 gallon of cream, which last yields one pound of butter. Also, that in the ice method of setting milk eighty-five pounds of ice are required for one hundred pounds of milk.

In 1874 Sweden exported 71,295 centner (of 94 pounds to a centner) of butter, of the value of 6,416,550 kronor—one kronor being equal to 26.80 cents in gold. This, taking the number of cows in Sweden at 1,340,000, was at the rate of five pounds per cow.

As a proof of the increasing interest in the dairy industry in Sweden, I would mention that two original works on that subject in Swedish have been published this present year. One, of which four thousand copies of the first edition were printed, is entitled, "Nägra ord rörande Ladugårds-och Mjölk-hushållning," (Some words on farm-yard and milk economy.) It is by Mr. P. Von Möller, a wealthy and cultivated landholder and member of the first chamber of the Rigsdag, and is considered a very excellent work. The other is by Professor Alfred Nathorst and entitled, "How should the dairy be managed to be, under our circumstances, the most paying?" This is, also, a good work.

It has been a saying among the Swedish peasantry that stock-raising and the dairy are necessary evils. In old times, however, these industries were rather extensively developed. Olaus Magnus, a Swedish historian, who wrote in the beginning of the sixteenth century, mentions in his work that cheeses were made in Sweden and exported, so large that two strong men could carry one of them only a short distance. He states, too, that they were made at "village dairies"—embryo factories—of milk brought in by the neighboring farmers' wives. An old and rare illustrated edition of his history in Latin contains a picture of two robust men in the act of carrying one of those cheeses.

GRAIN-RAISING IN SPAIN.—Don Perruelas, a member of the Spanish Cortes, in a late publication, shows that while Spain is the second among European countries in the proportion of farm-lands devoted to cereal culture, her actual product ranks only as the sixth. Great Britain averages 27½ bushels per acre, Netherlands 25¼, Belgium 20⅔, Norway 12⅔, and Spain 11½. Spain should at least excel Norway with her inhospitable climate and brief season of germination. The Spanish statesman attributes this remarkable result to the stolid listlessness of his countrymen. As long as an exhaustive system of culture will eke out

a common subsistence, no efforts will be made to aid the natural productiveness of the soil. Since 1851 there has been a gradually increasing deficit in home production of grain, which, in 1860, required an importation of 4,000,000 bushels of foreign grain, and in 1870 of nearly 20,000,000. Don Perruelas sees no remedy for this destructive drain upon the Spanish soil, except in a general reform of agricultural methods in impressing upon the agricultural classes the necessity of economizing the resources of the soil. To accomplish this, agricultural schools should be established; but the impoverished condition of the treasury forbids anything of the kind at present.

BEET-SUGAR IN DELAWARE.—An association of gentlemen in the State of Delaware has been formed with the purpose of developing the capacities of that State for the culture of the sugar-beet and the manufacture of beet-sugar. They have imported seeds from France, England, and Saxony, and have distributed them among the best farmers of Delaware, the eastern shore of Maryland, and the southern part of New Jersey for experimental culture. The superintendent of Delaware College farm also devotes special attention to scientific experiments with these seeds. Circulars are sent to each experimenter with specific directions in regard to culture, harvesting, and preservation of the crop. This movement, it is hoped, will inaugurate, during the Centennial year of our Independence, a new and profitable industry in this section of our country. Within the last quarter century we have more than doubled the rate of consumption of sugar in the United States. In 1850 we averaged about 20½ pounds per capita of the population, and in 1874, 42¾ pounds. We are paying from $80,000,000 to $90,000,000 per annum for foreign sugar, a very considerable proportion of which might be saved by home production. This can be done only by intelligent efforts like the above to test the local capacity of different sections for the sugar-beet and by greater enterprise in the cane-sugar regions bordering on the Gulf of Mexico.

INDUSTRIES OF KENT COUNTY, MICHIGAN.—In 1873 this county raised 569,353 bushels of wheat on 41,932 acres, 564,902 bushels of corn on 19,186 acres, 503,433 bushels of other grain, 263,866 bushels of potatoes, 43,552 tons of hay, and 251,072 pounds of wool. Of produce marketed, there were 1,145,944 pounds of pork, 17 285 pounds of cheese, 961,868 pounds of butter, 18,951 pounds of dried fruit, 2,272 barrels of cider, and 299,509 pounds of maple-sugar. The county contains 27 flouring-mills, 3 of which use steam as a motive-power; these employ 85 persons and $418,800 of invested capital, making, per annum, 159,350 barrels of flour, worth $1,339,025. The live stock embraces 10,391 horses over a year old, 124 mules, 1,609 oxen, 11,587 milch cows, 10,955 cattle, 13,200 swine over six months' old, and 60,571 sheep. In the county are 54 saw-mills, employing 1,065 persons, with a capital of $905,800, and turning out per annum 119,528,000 feet of lumber, worth $1,466,500. From 21 shingle-mills, operated by 168 employés and employing $45,000 of capital, an annual product of $128,000 is reported. In 17 planing and turning mills, employing 351 hands and $436,000 capital, $560,000 worth of products are annually turned out; 9 founderies and machine-shops, employing 209 hands and $212,700 capital, produce annually $309,000; 5 agricultural-implement factories, 88 hands and $162,000 capital, produce annually $220,000. Including the foregoing, the county contains 215 manufactories, employing 4,230 hands and $4,561,000 of capital, producing annually $7,149,319. The prosperous condition of the farmers of this county shows the influence of a home market for their products.

DEPRESSED CONDITION OF ENGLISH FARMING.—The Mark Lane Express says that farmers are keeping down expenses by every possible method of economy, and that the number of farm-laborers out of employ exceeds that of any former season, at least for several years past. Many are preparing to give up their leases, and an unusual number of farms to let are advertised. The land-owners still contend for rates of rental out of all proportion to the profits of cultivation. The general opinion among British farmers is that land is worth far less for purposes of cultivation than it was twenty years ago. Judging from the past, the Express comes to the uncomfortable conclusion that nothing but a panic will bring down British farm rents. "They have generally come down with a run when they have been reduced at all, and the run has invariably been preceded by a stampede of tenants." Perhaps a sufficient appreciation of the situation is still practicable by British land-owners, leading them to meet the present demand for lower rents with a prudent if not gracious compliance. If farming enterprise is to be hampered with this heavy tax of capital in real estate, it will be compelled to yield to the active competition of other countries, and the agricultural interest of the United Kingdom will receive a severe check.

DESTRUCTION OF LOCUSTS.—The Spanish government, by the collapse of the Carlist rebellion, found itself with a large army. An invasion of locusts suggested the novel employment of the troops in their destruction. Soldiers were sent by thousands into the infested districts to dig trenches in the line of march of those pests, and as they fell in to cover them with earth or turn pigs into the trenches to devour them. The contest promises to be as tedious as the Carlist war.

FACTS IN BRITISH AGRICULTURE.—The following statistics are condensed from recently-published official reports in Great Britain for 1875.

Proportion of farms of different sizes.—The holdings, or farms occupied by individual cultivators, are reported in three classes. The first, including those under 50 acres, constituted 71 per cent. of the whole number in England, and 70 per cent. each in Wales and Scotland. The second, including those having not less than 50 and not over 300 acres, in England, 25 per cent.; Wales, 27; Scotland, 27. The third, including those having over 300 acres, in England, 4 per cent.; Wales, 1; Scotland, 3.

Relative extent of cultivation and production by the different classes of farmers.—Of the total acreage under crops, fallow, and grass in England, the small farmers, being 71 per cent. of the whole number, cultivated 15 per cent.; the medium farmers, 25 per cent. in number, cultivated 56 per cent.; the large farmers, 4 per cent. in number, cultivated 29 per cent. In Wales the 70 per cent. in the first class cultivated 23 per cent.; the 29 per cent. in the second class, 68 per cent.; the 1 per cent. in the third class, 9 per cent. In Scotland the 70 per cent. in the first class cultivated 14 per cent.; the 27 per cent. in the second class, 58 per cent.; the 3 per cent. in the third class, 28 per cent.

Of the horses used solely in agriculture, or still unbroken, in England the first class held 19 per cent.; the second, 57; the third, 24. In Wales the first class, 27 per cent.; the second, 67; the third, 6. In Scotland the first class, 26 per cent.; the second, 57; the third, 17.

Horses were on the increase, as they had been for several years. In Great Britain the chief increase had been "in the class of mares kept solely for breeding, and of unbroken horses. The number of this class in 1875 was 388,000 against 367,000 in 1874 and 314,090 in 1871, so that between 1871 and 1875 there has been an increase, chiefly young horses,

of 74,000, or 23 per cent." The number of horses imported in 1873 was 17,822; in 1874, 12,033; in the first ten months of 1875, 23,390. The exports were 2,816 in 1873, 3,050 in 1874, and 2,791 in the first ten months of 1875. The trade-returns for 1875 showed that the average value of English horses exported was $385 per head, while that of those imported was only $185 per head. The total number of horses in the United Kingdom was estimated 2,790,000, of which 526,000 were in Ireland.

Of the cattle of all descriptions in England the class of small farmers held 23 per cent.; the middle class, 57; the large farmers, 20. In Wales, the first class, 30 per cent.; the second, 65; the third, 5. In Scotland, the first class, 27 per cent.; the second, 57; the third, 16.

In Great Britain there was a slight decrease in the total number, chiefly of young stock, the reduction being ascribed to the effects of the dry summer and severe winter of 1874. The number of cows and heifers in milk was diminished by only 20,000, being 2,253,000 in 1875 and 2,273,000 in 1874. The decrease of cattle under two years of age amounted to 168,000. "In the chief beef-producing class of stock, that of cattle of two years of age and above, there was an increase, compared with 1874, of 76,000, the number in 1875 being 1,585,000." The imports of oxen and cows into the United Kingdom were larger in 1875 than in either of the two years preceding, numbering, for the first eleven months in 1875, 215,000; in 1874, 148,000; in 1873, 151,000. The total number of cattle of all ages in the United Kingdom was 10,162,787. Of these, 6,050,797 were on the smaller islands, and 4,111,990 in Ireland.

Of the total number of sheep in England, the class of farmers holding less than 50 acres each possessed 9 per cent.; the middle class, 51; the class of large farmers, 40; in Wales, the first class, 28 per cent; the second, 63; the third, 9; in Scotland, the first class, 33 per cent.; the second, 44; the third, 23. The greater percentage of sheep on the small holdings in Wales and Scotland than in England, is accounted for by the fact that in these more hilly countries many of the small farmers hold tracts of rough pasture not returned in the area of "cultivated land." It is stated that a season which diminishes the supply of green food, especially grass, occasions greater proportionate reduction in the number of sheep than of cattle. Owing to the dry summer and severe winter of 1874, the total number of sheep and lambs in Great Britain was 1,146,000, or about 4 per cent. less in 1875 than in 1874; in Ireland the number was 189,000 less. The number imported into the United Kingdom was, in 1875, 938,000; in 1874, 721,000; in 1873, 812,000. The total number of sheep and lambs reported for 1875 was 33,491,948, of which 4,248,158 were in Ireland.

The total number of pigs in the United Kingdom was 3,495,167, of which 1,249,235 were in Ireland. In Great Britain there had been a decrease in the number in each of the last three years, which, in 1875, amounted to 193,000, while in Ireland there was an increase of 150,000.

The tables below give more specific statistics respecting the relative extent of different classes of crops and farm-animals.

Acres in crops.

	Years.	England.		Scotland.		Ireland.		Total for United Kingdom.	
		Acres.	Percentage.	Acres.	Percentage.	Acres.	Percentage.	Acres.	Percentage.
Total area of land and water	.....	32, 597, 398	.....	19, 496, 132	.....	20, 819, 886	.....	77, 828, 886	.....
Under all crops	1874	24, 008, 368	.....	4, 579, 821	.....	15, 752, 187	.....	47, 143, 320	.....
	1875	24, 112, 309	.....	4, 607, 898	.....	15, 774, 718	.....	47, 313, 789	.....
Corn-crops	1874	7, 505, 076	31. 3	1, 410, 413	30. 8	1, 901, 508	12. 1	11, 364, 834	24. 1
	1875	7, 528, 543	31. 2	1, 410, 929	30. 6	1, 916, 398	12. 1	11, 399, 030	24. 1
Green crops	1874	2, 764, 182	11. 5	685, 132	15. 0	1, 353, 362	8. 6	4, 957, 683	10. 5
	1875	2, 848, 473	11. 8	684, 549	14. 8	1, 370, 086	8. 7	5, 057, 029	10. 7
Bare fallow	1874	607, 489	2. 5	20, 687	.4	12, 187	.1	673, 376	1. 4
	1875	515, 186	2. 1	16, 876	.4	11, 287	.1	570, 005	1. 2
Grass and clover	1874	2, 618, 655	10. 9	1, 357, 009	29. 6	1, 906, 083	12. 1	6, 284, 925	13. 3
	1875	2, 608, 106	10. 8	1, 385, 369	30. 1	1, 943, 923	12. 3	6, 337, 953	13. 4
Permanent pasture	1874	10, 438, 149	43. 5	1, 106, 321	24. 2	10, 472, 161	66. 5	23, 680, 416	50. 2
	1875	10, 536, 283	43. 7	1, 110, 025	24. 1	10, 431, 776	66. 1	23, 772, 602	50. 2
In orchards	1875	150, 600	.....	1, 449	.....	.....	.....	.....	.....
In woods	1875	1, 325, 765	.....	734, 490	.....	325, 173	.....	.....	.....

Number of farm-animals.

	Years.	England.		Scotland.		Ireland.		Total for United Kingdom.	
		Acres.	No. to each 100 acres in crops.	Acres.	No. to each 100 acres in crops.	Acres.	No. to each 100 acres in crops.	Acres.	No. to each 100 acres in crops.
Total number of horses.	1874	1, 007, 398	4. 2	180, 818	3. 9	525, 770	3. 3	1, 847, 148	3. 9
	1875	1, 031, 776	4. 3	183, 642	4. 0	526, 160	3. 3	1, 875, 851	4. 0
Number of cattle	1874	4, 305, 540	17. 9	1, 154, 846	25. 2	4, 118, 113	26. 1	10, 281, 036	21. 8
	1875	4, 218, 470	17. 5	1, 143, 080	24. 8	4, 111, 990	26. 1	10, 162, 787	21. 5
Number of sheep	1874	19, 859, 758	82. 7	7, 389, 487	161. 3	4, 437, 613	28. 2	34, 837, 597	73. 9
	1875	19, 114, 634	79. 3	7, 100, 994	154. 1	4, 248, 158	26. 9	33, 491, 948	70. 8
Number of pigs	1874	2, 058, 781	8. 6	150, 297	3. 3	1, 096, 494	7. 0	3, 537, 354	7. 5
	1875	1, 875, 357	7. 8	151, 213	3. 3	1, 249, 235	7. 9	3, 495, 167	7. 4

LAND-OWNERS AND LANDS IN ENGLAND.—Official returns for England and Wales, exclusive of the metropolis, make the total population 19,458,009; the number of land-owners owning less than 1 acre, 703,289; owning 1 acre or more, 269,547; total, 972,836. Extent of lands, 33,013,510 acres; estimated gross rental, $496,761,515; estimated extent of commons or waste lands, 1,524,648 acres.

FRESH BEEF IN LONDON FROM THE UNITED STATES.—The Agricultural Gazette of February 21, 1876, in noticing the fact that on the previous Monday 70 tons of beef, in quarters, shipped from this country, arrived in London, in addition to about 300 tons arriving in January, states that "the possibility of landing dead meat in a sound and sweet condition, after a three weeks' voyage, has at length been clearly demonstrated." The successful arrangements for safe shipment are thus described: "Square compartments are formed in the hold of the vessel, outside of which tanks are placed. By these means the temperature of the atmosphere in which the meat hangs is kept down to something under 40°. To prevent condensation of vapor in this ice-bound tank, a constant current is kept up by a fan driven by steam from the boiler of the vessel." The newly-slaughtered meat, cut in quarters, each covered in cheap cotton cloth tightly sewed around it, is hung up in this safe,

the quarters not being permitted to touch one another. The writer states: "It is anticipated that an immense trade of this kind will be done before many years; and this, not only in the winter, but through the summer months. Arrangements are being made for increasing this traffic at an early date. The margin of prices is so great that efforts will be made to get the White Star and Cunard lines of steamers to take in a meat-safe and ice-tanks, by which means consignments may be made almost every day of the week. What has arrived has been brought by the Guion steamers. Viewing this matter commercially, there is ample room for expanding this trade. The average weight of meat sent to the metropolitan market during the last seven years has been 500 tons per day."

A later paragraph announces the arrival, in good condition, by the White Star line, of 650 quarters, weighing about 60 tons.

IMPROVED METHOD IN WHEAT CULTURE.—The following communication is addressed to the Commissioner of this Department by Mr. John M. Heiges, of York, York County, Pennsylvania, under date of May 20, 1876.

In reply to yours of the 17th instant, requesting me to give you an article on the "principle" I have adopted in wheat culture, and its results, I would say: I commenced farming about eight years ago. My success in raising wheat was not very satisfactory, and as I did not believe in seeding with the drill, I scored my ground with shovel-plow, sowed broadcast, and harrowed in. I thought my wheat looked much better than adjoining fields sown with the drill; still, not being satisfied, and believing that I could not raise a crop of corn or potatoes without cultivating, I asked myself this question, Would it not pay to cultivate wheat the same as corn? In the summer of 1872 I manured about three acres of ground, plowed it down about the 10th of August, and let it lie until about the 20th of September, when I plowed it the second time and harrowed well. I then measured off a sixth of an acre, and used a common hoe to make scores about five inches wide, and as nearly level on the bottom as they could be made. I left a space of about six inches wide between the scores. I sowed on said plot 8 quarts of Fultz wheat on the 25th of September, and raked it in. In the spring of 1873, I hoed the spaces between the wheat once in April and once the first week of May. Sowed to clover after the last hoeing, and had a fine crop of clover. When the wheat came into heads, I found them much larger than those of the same variety sowed the same day on adjoining ground of the same kind of soil, and the whole treated alike as to manuring and plowing. I harvested and thrashed from the plot a little over 8 bushels, or nearly double the amount per acre produced on the remainder of the field. I always plow twice for wheat and very deep.

In the fall of 1873 I sowed all my wheat on the same principle, but making my scores (with a double mold-board cultivator) about 8 inches wide, and the ridges about 10 inches wide, sowed broadcast and harrowed lengthwise once, then dragged to level the ground. In the spring of 1874 I cultivated a plot of one acre. I hoed part of the plot once, part twice, and the remainder three times. On the part hoed once the heads were about one-eighth larger than where I did not hoe; on the part hoed twice they were still larger; and on the plot hoed three times they were larger yet, some of them measuring nearly 6 inches in length, and satisfying me that it pays to hoe three times. The yield from the plot cultivated was 55 bushels per acre; from the remainder of the field about 23 bushels per acre. Of course I did not sow the plot I hoed to grass. The remainder of the field was sowed with timothy and clover.

In the fall of 1874 I again put my crop in on the same principle. Some of it I left without spring cultivation. I found that the heads of that which I did not cultivate were larger than the heads of the same variety put in with the drill, but not anything in comparison with the heads on the ground which I cultivated. I have a lot of ground containing 29 square yards—less than the third of an acre—on which I sowed 15 quarts of a new variety of wheat, which I had made by cross-fertilization, using as the parents Arnold's hybrid No. 9 and Fultz; the former being a white wheat, stiff straw, and the latter a red wheat. The yield from that lot was 16¼ bushels, or about 49⅜ bushels per acre. Gave it only one hoeing in the spring of 1875. In the fall of 1874 I procured 1 pound of seed of a wheat imported from one of the German States, some person having brought it with him from Germany. I paid for the pound $1, and sowed it on the fifty-sixth part of an acre. I hoed it once in April, again on the 3d of June, and cut and thrashed from the product 1 bushel and 9½ quarts, or at the rate of 71 bushels per acre. I had the plot measured by two of the managers and in the presence of the president and secretary of the York County Agricultural Society. I have

now about six acres of wheat growing, put out in the same way, except that last fall I made the scores 12 inches wide, left the spaces for cultivating 10 inches wide, thereby utilizing more ground than heretofore, and using the same space for cultivation. My wheat this summer looks much better than any former year at this time. I am well satisfied that the advantages are, more space occupied, a freer circulation of air, opening up the soil to air and warmth when the plant seems to need such influences, the growing of the wheat in larger masses, so that it is more difficult for the frost to uproot it, and the better setting of the plant if lifted by the frost. It also seems to me that it protects itself better than when sowed with the drill. You can form a much more correct idea of it when you see the wheat growing. As I said before, I sow broadcast, and harrow lengthwise, and nearly all that falls on the ridges rolls down into the scores by harrowing.

The extra cost of putting in wheat in this way, and of cultivating it, over the cost of drilling, I do not think would reach $3 per acre, though I have not kept an accurate account.

I have now given you, as nearly as I can, on paper, the principle and results of my experiments in wheat-culture for the last few years. These experiments have convinced me that the new method is more successful in insuring a crop than any other.

A FATAL WORM.—A correspondent in Wilson County, Texas, reports that 10 per cent. of the colts and lambs have been lost through injuries from a "screw-worm," which has infested them throughout the winter.

HARD FROST.—Our correspondent in Powhatan County, Virginia, reports that on the night of April 30 a severe frost killed all apples, peaches, and other fruit, and did much injury to garden-vegetables.

WHEAT FROM THE UNITED STATES IN RUSSIA.—In 1875, in response to a request from Mr. Louis Walkoff, a large agriculturist at Kiev, South Russia, this department sent to him, for trial, samples of Tappahannock, Jennings, Fultz, and Clawson wheat. Under date of April 29, 1876, he reports that these wheats, drilled in on the 3d of September, were all frozen out during the winter. The maximum of cold was 26½° Fahrenheit below zero, under which the Poland wheat grown in that climate stood the winter very well.

ONIONS IN EPIZOOTIC INFLUENZA.—S. R. Mason, of Purple Cane, Dodge County, Nebr., under date of May 16, writes:

When the epizootic influenza first made its appearance in the East, some three years ago, and long before it reached us, as a means of prevention I gave each beast a pint of small onion sets daily in the feed-boxes with their corn. Almost every horse and mule in the State had the disease badly, and all that were in a weak condition when attacked died. My team not only escaped but was in excellent condition all the time, doing all my own work, besides much hauling for my neighbors, whose teams were disabled. Since then, I see by the papers that others have tried the onions with complete success, preventing attack and curing the diseased.

My team never touched the corn till they had eaten the onions. All kinds of stock require a variety of food; and roots, such as onions, beets, mangels, carrots, parsnips, turnips, &c., are relished by them, as well as wholesome, the year round. I never had an animal sick, and I ascribe their uniform good health to a frequent use of green vegetables. For convenience I keep the root-stock in accessible pits during winter.

IS THE POTATO-BUG LARVA POISONOUS?—Dr. S. J. Parker, of Ithaca, N. Y., communicates the following facts as an answer to this question.

I can respond in the affirmative in a few decided instances. Mrs. B——, residing five miles northeasterly from me, picked, when they first appeared, the larva off the vines with her hands. They became sore, especially between the fingers and on their backs, which skin disease was very intractable and months in healing. Many in the vicinity, also, state temporary injuries to the skin of the hands, as about the nails, between the fingers, and that old scratches and scars become inflamed. A gentleman of leisure, who is farming, has often remarked, "they ought to be good for medicine, for they blister well." Yet my impression is that they may be crushed with great impunity by most people on the bare skin if soon washed off.

But the most serious cases occurred not quite a year ago. An Irishman, residing a few miles off, allowed the larva to get into his boots, and hoed most of the day with crushed larva and bugs next his sweaty flesh. The result was not a *blistering*, in the

usual sense of the word, but a peculiar pus-formation beneath the outer layer of the skin. If any reader ever saw a post-mortem of a case of sudden, violent headache, excruciating in its agony, terminating in about two days in death, and on opening the skull has seen the waved lines of pus just under the covering of the brain, he has seen the form of the blistering of the potato-bug. It is that beneath a fiery red skin there appears irregular waved lines, about a sixteenth to an eighth of an inch wide, of pus or matter, which connect with each other. A marbled surface, congested, and with so much purulent matter that it seems as if by pricking it with a lancet a large quantity of pus would escape; but on using the lancet, even by dozens of cuts, but little of the yellow or greenish pus escapes. This man was six weeks in recovering.

The next case was also an Irishman. He was predisposed to gout and gouty rheumatism. When I was called to see him he had the pus-mark of the potato-bug, that is, the moss-like, or plant-like wavy lines of green and yellow pus on both feet and ankles; one leg up to the knee. I immediately asked for exposure to potato-bug; he denied any; but his daughter brought a pair of old shoes full of holes, and without strings, which were covered on their inside with the crushed wings of the Colorado potato-beetle. Then he said, "I never paid any attention to the bugs; did not know they could do any harm." He had worked three days with his feet wet with the juice of the beetles and larva, and his filthy old stockings stained with them, and not washed his feet at night. He lingered over two months and died in consequence.

The symptoms of the poisoning are burning, or "blistering heat," pain, restless oppression in the part, and the peculiar moss-like lines of slight deposit of pus in a mottled red, blackish skin. In the severe cases only constant application of ice or cold water gives ease; and, in the cases of my two Irishmen, even opiates gave but imperfect sleep.

The cuticle does not tend to break until a glove-like separation of the cuticle takes place quite imperfectly, and this with but little relief to the distress in severe cases.

I have seen but one case of breathing the fumes of hot water in scalding to death the bugs recently deposited. That had the red, angry appearance as if commencing scarlet fever, (in the throat,) with a choking sensation. It was intractable to any ordinary remedies either regular or homeopathic.

Hence, I conclude that while thousands work in potatoes infected with Colorado beetles and their larva and kill these insects, without danger, yet there is danger of a peculiar, intractable poisoning, attended with a pus formation not unlike that of certain forms of arachnoidites. And, therefore, those liable to scrofulous and skin diseases and to throat diseases should use caution.

Probably many are poisoned who do not know it, and, as has been in trichina and other diseases, die, and the cause of disease is not recognized either by themselves or their physicians. Had I not seen the first Irishman, I certainly had not found out that the second died of potato-bug poison.

MOTIVE POWER OF ANIMALS.—In a paper recently read before the French society for the advancement of science, M. Marey showed that animals employed as motors exercised their power by jerks, so that commonly there was a waste of labor. He recommended the use of elastic material, such as India rubber, in carriage-traces, &c., in order to equalize and economize the power of the animal. In towing canal-boats by aid of long ropes, the tightening and slacking of the rope, and its oscillating movement, contribute to the desired elasticity of draught.

MARKET-PRICES OF FARM-PRODUCTS

MAY AND JUNE, 1876.

The following quotations represent, as nearly as practicable, the state of the market at the opening of each month.

Articles.	May.	June.
NEW YORK.		
Flour, superfine State and western.per barrel..	$4 10 to $4 50	$4 00 to $4 90
extra State.....do.....	4 90 to 5 50	4 90 to 7 00
extra to choice western.....do.....	4 90 to 9 00	4 90 to 9 00
common to choice southern, shipping extras.....per barrel..	5 00 to 6 25	4 90 to 6 15
common to choice southern, family brand.....per barrel..	6 25 to 8 75	6 15 to 9 00
Wheat, No. 1 spring.....per bushel..	1 26 to 1 30	1 28 to 1 30
No. 2 spring.....do.....	1 18 to 1 22	1 16 to 1 22
winter, red, western.....do.....	1 05 to 1 50	1 13 to 1 40
winter, amber, western.....do.....	1 05 to 1 50	1 13 to 1 40
winter, white, western.....do.....	1 32 to 1 45	1 35 to 1 50
Corn.....do.....	60⅝ to 61½	40 to 59½
Oats.....do.....	41 to 53	32 to 47
Rye.....do.....	80 to 95	85 to 96
Barley.....do.....	Nominal	Nominal
Hay, baled, first quality, for retail...per ton..	20 00 to 22 00	17 00 to 20 00
baled, second quality for shipping.do....	15 00 to 16 00	16 00 to ———
Beef, mess.....per barrel..	12 00 to 12 50	11 00 to ———
extra mess.....do.....	13 00 to ———	12 00 to ———
Pork, mess.....do.....	21 45 to 21 70	18 80 to 19 25
extra mess.....do.....	17 50 to ———	——— to ———
prime mess.....do.....	Nominal	——— to ———
Lard.....per pound..	13 to 13⅓	10¾ to 11½
Butter, western.....do.....	22 to 32	16 to 25
State dairy.....do.....	25 to 32	19 to 27
Cheese, State factory.....do.....	6 to 13	8 to 11¾
western factory.....do.....	3 to 12¼	8¾ to 10¾
Sugar, fair to prime refining.....do.....	7½ to 7⅞	7 to 8
Cotton, ordinary to good ordinary....do.....	9½ to 10⅞	8⅝ to 10½
low middling to good middli'g.do.....	11¾ to 12¾	11 to 12¾
Tobacco, lugs.....do.....	4½ to 7	6 to 8
leaf.....do.....	7 to 10½	8 to 10
Wool, American XXX and picklock...do.....	45 to 55	46 to 48
American XX and X.....do.....	38 to 46	38 to 44
American combing.....do.....	48 to 57	48 to 58
pulled.....do.....	25 to 42	25 to 40
California, spring clip.....do.....	21 to 30	19 to 25
California, fall clip.....do.....	16 to 23	12½ to 16
BOSTON.		
Flour, western superfine, spring...per barrel..	4 00 to 4 25	3 50 to 4 00
common spring extras.....do.....	4 50 to 5 00	4 25 to 5 00
good to fancy n'hwest'n spring.do.....	5 00 to 9 50	5 00 to 9 25
good to fancy western winter..do.....	6 00 to 9 00	6 00 to 9 00
southern family.....do.....	6 50 to 9 00	7 00 to 9 00
Wheat.....per bushel..	1 05 to 1 60	1 10 to 1 60
Corn.....do.....	62 to 65	61½ to 65½
Oats.....do.....	42 to 52	42 to 56
Rye.....do.....	90 to 92	85 to 87½
Barley.....do.....	85 to 1 20	85 to 1 20
Hay, eastern and northern.....per ton...	15 00 to 21 00	16 00 to 23 00

Market-prices of farm-products—Continued.

Articles.	May.	June.
BOSTON—Continued.		
Beef, mess ..... per barrel..	$12 00 to ———	$11 50 to ———
extra mess ..... do.....	13 50 to ———	13 00 to ———
family ..... do.....	15 50 to $16 50	15 00 to $16 00
Pork, prime ..... do.....	19 00 to 19 50	17 50 to 18 00
mess ..... do.....	22 50 to 22 75	21 00 to 21 50
Lard ..... per pound..	14 to 14¾	13¼ to 13½
Butter, New York and Vermont ..... do.....	27 to 30	22 to 25
western ..... do.....	18 to 28	17 to 24
Cheese, New York and Vermont factory do.....	9 to 13	8 to 12
western factory ..... do.....	8 to 12½	7 to 11½
Sugar, fair to good refining ..... do.....	7½ to 7⅞	7⅝ to 7⅞
Cotton, ordinary to good ordinary ..... do.....	9¼ to 11	8⅝ to 10¼
low middling to good middling. do.....	12½ to 14	10¾ to 13
Wool, Ohio and Pennsylvania ..... do.....	37 to 48	36 to 45
Michigan ..... do.....	33 to 38	32 to 36
other western ..... do.....	32 to 37	32 to 35
pulled ..... do.....	18 to 42	15 to 40
combing fleece ..... do.....	47 to 55	45 to 47
California ..... do.....	14 to 28	14 to 28
PHILADELPHIA.		
Flour, superfine ..... per barrel..	3 50 to 4 00	3 25 to 4 00
Pennsylvania extra to choice ... do.....	4 25 to 6 75	4 25 to 6 75
western extra to choice ..... do.....	5 25 to 7 00	5 25 to 8 25
Wheat, white ..... per bushel..	1 50 to 1 55	1 45 to 1 55
amber ..... do.....	1 50 to 1 55	1 40 to 1 48
red ..... do.....	——— to ———	1 15 to 1 43
Rye ..... do.....	1 25 to 1 50	80 to 85
Barley ..... do.....	——— to ———	Nominal.
Corn ..... do.....	60 to 62	57 to 59
Oats ..... do.....	42 to 48	34 to 43
Hay, baled, prime ..... per ton..	21 00 to 23 00	19 00 to 20 00
common to fair shipping ..... do.....	19 00 to 20 00	17 00 to 19 00
Beef, western mess ..... per barrel..	9 00 to 10 00	6 00 to 8 00
extra mess ..... do.....	11 50 to 12 00	10 50 to 11 00
Warthman's city family ..... do.....	16 00 to ———	14 50 to 15 00
Pork, mess ..... do.....	22 50 to ———	20 50 to ———
prime mess ..... do.....	18 50 to 19 00	18 00 to ———
prime (extra) ..... do.....	18 50 to 19 00	17 00 to ———
Lard ..... per pound..	13 to 13¾	11¼ to 16½
Butter, choice Middle States ..... do.....	30 to 36	24 to 26
choice western ..... do.....	26 to 28	18 to 20
Cheese, New York factory ..... do.....	5 to 14	5 to 13½
Ohio factory ..... do.....	4 to 12½	4 to 12
Sugar, fair to good refining ..... do.....	7⅝ to 7⅞	7⅝ to 7⅞
Cotton, ordinary to good ordinary ..... do.....	9⅜ to 10¾	8⅜ to 10⅛
low middling to good middling. do.....	12⅜ to 13⅝	11½ to 13
Wool, Ohio and Pennsylvania X to XXX ..... per pound..	28 to 43	28 to 42
other western ..... do.....	35 to 42	30 to 36
pulled ..... do.....	22 to 36	22 to 36
combing fleece ..... do.....	37 to 60	40 to 55
tub-washed ..... do.....	40 to 48	30 to 45
BALTIMORE.		
Flour, superfine ..... per barrel..	3 50 to 4 50	3 50 to 4 50
extra ..... do.....	4 75 to 6 25	4 75 to 6 25
family ..... do.....	5 75 to 8 75	5 75 to 8 75
Wheat, red ..... per bushel..	1 20 to 1 45	1 10 to 1 37
amber ..... do.....	1 52 to 1 55	1 40 to 1 45
white ..... do.....	1 40 to 1 50	1 20 to 1 35

Market-prices of farm-products—Continued.

Articles.	May.	June.
BALTIMORE—Continued.		
Rye ..... per bushel..	$0 73 to $0 75	$0 75 to $0 80
Oats ..... do.....	39 to 48	34 to 42
Corn ..... do.....	53½ to 62	53 to 57
Hay, Maryland and Pennsylvania ....per ton..	21 00 to 26 00	22 00 to 23 00
western ..... do.....	20 00 to 23 00	15 00 to 19 00
Pork, mess ..... per barrel..	22 25 to 22 50	20 00 to ———
prime ..... do.....	21 25 to ———	19 00 to ———
extra prime ..... do.....	18 50 to ———	18 00 to ———
Lard ..... per pound..	13¼ to 14	12½ to 13
Butter, western ..... do.....	——— to ———	13 to 20
eastern ..... do.....	22 to 30	13 to 20
Cheese, western factory ..... do.....	11 to 13	11 to 12
eastern factory ..... do.....	12½ to 14½	10 to 11½
Sugar, fair to good refining ..... do.....	7½ to 7⅝	7⅝ to 7⅞
New Orleans grocery grades...do.....	None.	——— to ———
Tobacco, lugs ..... do.....	6½ to 9	6½ to 11
leaf, common to medium ....do.....	9 to 11	9 to 11
Cotton, ordinary to good ordinary.....do.....	8¾ to 10	8 to 9¼
low middling to good middling..do.....	11⅛ to 12¾	10 to 11¼
CINCINNATI.		
Flour, superfine ..... per barrel..	3 50 to 3 90	3 50 to 3 75
extra ..... do.....	4 25 to 4 65	4 25 to 4 65
family and fancy ..... do.....	6 50 to 7 75	6 25 to 8 50
Wheat, winter, red ..... per bushel..	70 to 1 30	1 15 to 1 30
hill, (amber) ..... do.....	1 25 to 1 30	——— to 1 35
white ..... do.....	1 35 to 1 45	1 30 to 1 40
Oats ..... do.....	35 to 43	32 to 34
Corn ..... do.....	45 to 51	38 to 47
Rye ..... do.....	70 to 75	65 to 73
Barley ..... do.....	30 to 94	Nominal.
Hay, baled, No. 1 ..... per ton..	15 00 to 18 00	16 00 to 18 00
lower grades ..... do.....	7 00 to 10 00	7 00 to 10 00
Pork, mess ..... per barrel..	20 50 to 21 50	18 50 to ———
Lard ..... per pound..	12 to 13¼	10⅝ to 12½
Butter, choice ..... do.....	25 to 28	18 to 20
prime ..... do.....	20 to 23	16 to 18
Cheese, prime to choice ..... do.....	12 to 12½	9 to 10
Sugar, New Orleans, fair to good..... do.....	8¼ to 8⅝	8½ to 9
prime ..... do.....	8⅝ to 9	9 to 9¼
Tobacco, lugs ..... do.....	——— to ———	——— to ———
leaf ..... do.....	——— to ———	——— to ———
Cotton, ordinary to good ordinary ....do.....	8¼ to 9⅝	07½ to 9
low middling to good middling, do.....	11 to 12⅝	10¼ to 12
Wool, fleece, common to fine .....do.....	35 to 40	30 to 35
tub-washed ..... do.....	38 to 42	32 to 37
unwashed, clothing ..... do.....	25 to 37	22 to 23
combing ..... do.....	30 to 35	27 to 32
pulled ..... do.....	28 to 30	26 to 27
CHICAGO.		
Flour, choice winter extras ..... per barrel..	7 30 to 7 80	7 37½ to 7 87½
common to good winter extras .do.....	5 80 to 7 10	5 87½ to 7 25
spring extras, common to good..do.....	4 30 to 5 10	4 50 to 5 00
spring extras, choice ..... do.....	5 10 to 5 60	5 50 to 5 87½
patent spring ..... do.....	6 00 to 9 00	6 00 to 9 00
spring superfines ..... do.....	3 00 to 3 75	3 00 to 4 00
Wheat, No. 1 spring ..... per bushel..	1 12½ to ———	1 04½ to 1 11
No. 2 spring ..... do.....	98 to 99½	1 02½ to 1 03½
No. 3 spring ..... do.....	90 to 90¾	91¾ to 92½

Market-prices of farm-products—Continued.

Articles.		May.	June.
CHICAGO—Continued.			
Rye, No. 2	per bushel	$0 62 to ———	$0 63 to $0 68½
Barley, No. 2	do	62½ to $0 63	55 to ———
Corn No. 2	do	45½ to 46	44½ to 45
Oats, No. 2	do	30½ to 30½	28¼ to 28⅜
Hay, timothy	per ton	12 00 to 14 00	10 50 to 13 00
prairie	do	9 00 to 11 00	9 00 to ———
Beef, mess	per barrel	10 75 to ———	10 75 to 11 00
extra mess	do	11 50 to 11 75	11 75 to 12 00
Pork, mess	do	20 45 to 20 60	17 80 to 17 90
prime mess	do	20 00 to ———	——— to ———
extra prime	do	16 00 to ———	13 00 to ———
Lard	per pound	12½ to 13	10¾ to 11⅛
Butter, choice to fancy	do	30 to 35	19 to 24
medium to good	do	25 to 28	15 to 18
Cheese, good to choice factory	do	9 to 11	9 to 9½
Sugar, New Orleans	do	7⅞ to 8¾	——— to ———
Wool, tub-washed	do	44 to 50	35 to 41
fleece-washed	do	38 to 42	30 to 33
unwashed	do	23 to 28	18 to 24
pulled	do	30 to 37	——— to ———
SAINT LOUIS.			
Flour, winter, common to choice	per barrel	3 50 to 7 00	3 50 to 6 50
spring	do	——— to ———	——— to ———
Wheat, white winter	per bushel	1 00 to 1 40	1 10 to 1 40
red winter	do	88 to 1 43	86 to 1 40
spring	do	——— to ———	——— to ———
Corn	do	41 to 50	39 to 44½
Rye	do	50 to 68	50 to 63
Barley, fair to choice	do	70 to 1 00	70 to 1 00
Oats	do	31 to 38	30 to 37
Hay, timothy	per ton	17 25 to 17 50	15 00 to 19 00
prairie	do	9 25 to 9 75	8 00 to 8 50
Beef, mess	per barrel	14 00 to 15 50	14 00 to 14 50
Pork, mess	do	23 00 to 23 50	23 00 to 23 50
Lard	per pound	11½ to 13¾	11½ to 13¾
Butter, prime to choice dairy	do	25 to 26	18 to 20
country packed	do	22 to 25	13 to 16
Cheese, Ohio factory	do	12½ to 13½	12½ to 13½
New York factory	do	13 to 14	13 to 14
Wool, tub-washed	do	42 to 45	35 to 37
fleece-washed	do	38 to 40	36 to 37
unwashed	do	26 to 27	26 to 27
NEW ORLEANS.			
Flour, superfine	per barrel	3 75 to ———	3 75 to ———
extra	do	4 25 to 5 25	4 00 to 5 25
choice to fancy	do	5 50 to 7 50	5 50 to 7 25
Corn, white and yellow	per bushel	57 to 68	63 to 70
Oats	do	32 to 44	40 to 43
Hay, choice	per ton	22 00 to 23 00	23 00 to 25 00
prime	do	17 00 to ———	21 00 to ———
Beef, Kansas	per barrel	——— to ———	——— to ———
Texas	do	12 00 to 12 50	12 00 to 12 50
western	do	15 00 to 15 50	14 00 to 15 50
Fulton market	per half barrel	11 75 to 12 00	11 75 to 12 00
Pork, mess	per barrel	22 00 to 22 75	22 50 to 22 75
Lard	per pound	13½ to 14¾	13 to 14¼
Butter, choice Goshen	do	42 to 44	33 to 35
choice western	do	25 to 33	28 to 30

Market-prices of farm-products—Continued.

Articles.	May.	June.
NEW ORLEANS—Continued.		
Cheese, choice western factory....per pound..	$0 13 to $0 13¾	$0 12½ to $0 13
New York cream.....do.....	15½ to 16	15 to ———
Sugar, fair to fully fair .....do.....	7⅞ to 8½	7⅞ to 8¼
prime to strictly prime .....do.....	8¾ to 9	8½ to ———
clarified, white and yellow....do.....	9¼ to 10¼	9½ to 10¼
Cotton, ordinary to good ordinary ....do.....	8 to 9¾	7¾ to 9½
low middling to good middling..do.....	10⅜ to 13⅝	10½ to 12¼
Tobacco, lugs.....do.....	5 to 7	5½ to 7½
low leaf to medium leaf.....do.....	7½ to 10½	8½ to 11½
SAN FRANCISCO.		
Flour, superfine .....per barrel..	4 25 to 4 50	4 00 to 4 50
extra .....do.....	4 75 to 5 25	4 50 to 5 75
family and fancy .....do.....	5 50 to 6 50	6 00 to 6 25
Wheat, California.....per cental..	1 50 to 1 90	1 50 to 1 75
Oregon .....do.....	1 75 to 1 85	1 60 to 1 72½
Barley .....do.....	1 10 to 1 25	1 00 to 1 20
Oats.....do.....	2 00 to 2 50	2 25 to 2 50
Corn .....do.....	1 05 to 1 15	1 05 to 1 15
Hay, State .....per ton..	12 00 to 19 00	9 00 to 15 00
Pork, mess.....per barrel..	22 00 to 24 00	22 00 to 24 00
prime mess .....do.....	17 50 to 18 50	17 50 to 18 50
Beef, mess.....do.....	8 50 to 10 00	9 50 to 10 00
family mess.....per half-barrel..	8 50 to 10 00	8 50 to 10 00
Lard .....per pound..	13 to 15	13 to 15
Butter, overland .....do.....	16 to 18	16 to 18
California .....do.....	25 to 30	25 to 30
Oregon .....do.....	20 to 22½	20 to 22½
Cheese.....do.....	12½ to 15	12½ to 15
Wool, native.....do.....	10 to 15	9 to 12½
California .....do.....	15 to 18	15 to 18
Oregon.....do.....	16 to 18	15 to 18

LIVE-STOCK MARKETS.

NEW YORK.		
Cattle, extra beeves .....per cental..	$11 25 to $12 00	——— to ———
good to prime .....do.....	10 00 to 11 00	$9 75 to $10 75
common to fair.....do.....	8 00 to 9 75	8 00 to 9 50
Texas. .....do.....	8 00 to 9 00	8 00 to 9 00
milch-cows .....per head..	50 00 to 80 00	——— to ———
veal calves.....per cental..	4 50 to 7 00	3 50 to 7 00
Sheep .....do.....	6 50 to 8 50	4 50 to 7 50
Swine .....do.....	None in market.	6 90 to 7 00
PHILADELPHIA.		
Cattle, prime beeves .....per cental..	6 75 to 7 00	6 00 to 6 50
fair to good.....do.....	6 00 to 6 50	5 00 to 5 75
common .....do.....	5 00 to 5 25	4 00 to 4 75
Sheep .....do.....	4 00 to 7 75	4 00 to 6 75
Swine, corn-fed .....do.....	11 00 to 12 25	10 00 to 10 50
BALTIMORE.		
Cattle, best beeves.....per cental..	6 50 to 6 25	4 75 to 5 75
first quality.....do.....	5 00 to 5 50	4 37 to 4 75
medium or good quality.....do.....	4 50 to 5 00	4 00 to 4 37
ordinary.....do.....	4 00 to 4 25	3 50 to 4 00

Live-stock markets—Continued.

Articles.	May.	June.
BALTIMORE—Continued.		
Cattle, general average of the market.pr. cental	$5 50 to ———	$5 00 to ———
most of the sales.....do.....	5 00 to $6 00	4 37 to $5 25
milch-cows.....per head..	——— to ———	——— to ———
Sheep.....per cental..	2 75 to 6 00	4 00 to 5 75
Swine.....do.....	9 75 to 11 00	8 50 to 9 25
CINCINNATI.		
Cattle, good to prime butchers' steers.....per cental..	4 75 to 5 25	4 25 to 5 00
fair to medium.....do.....	3 75 to 4 50	3 50 to 4 25
common.....do.....	2 75 to 3 50	2 50 to 3 25
milch-cows.....per head..	——— to ———	——— to ———
veal calves.....per cental..	——— to ———	——— to ———
Sheep.....do.....	4 00 to 7 60	3 50 to 5 00
Swine.....do.....	6 00 to 7 35	5 25 to 6 00
CHICAGO.		
Cattle, extra-graded steers.....per cental..	——— to ———	——— to ———
choice beeves.....do.....	——— to 5 30	4 75 to 5 00
good beeves.....do.....	4 10 to ———	4 40 to 4 65
medium.....do.....	3 50 to 4 00	4 25 to 4 65
inferior natives.....do.....	2 50 to 3 75	2 50 to 4 15
Texas.....do.....	——— to ———	——— to ———
Sheep.....do.....	4 00 to 6 35	3 00 to 5 50
Swine.....do.....	7 25 to 7 65	5 80 to 6 35
SAINT LOUIS.		
Cattle, good to choice native steers.per cental..	4 20 to 4 50	4 45 to 4 50
common to fair natives.....do.....	3 25 to 4 05	3 25 to 4 25
inferior to common natives...do.....	2 00 to 3 25	2 00 to 3 25
Texas, fair to choice.....do.....	3 00 to 3 50	3 00 to 4 00
Sheep.....do.....	2 75 to 5 25	3 75 to 5 25
Swine.....do.....	7 20 to 7 55	5 40 to 5 90
Horses, plugs.....per head..	30 00 to 50 00	30 00 to 35 00
plain.....do.....	60 00 to 75 00	45 00 to 55 00
street-car.....do.....	75 00 to 125 00	75 00 to 125 00
heavy draught.....do.....	115 00 to 125 00	115 00 to 125 00
good drivers.....do.....	100 00 to 150 00	175 00 to 225 00
extra.....do.....	175 00 to 200 00	125 00 to 250 00
auction horses and ponies....do.....	25 00 to 45 00	25 00 to 45 00
Mules, 14 to 15 hands high.....do.....	80 00 to 120 00	85 00 to 120 00
15 to 16 hands high.....do.....	115 00 to 130 00	115 00 to 150 00
extra.....do.....	160 00 to 170 00	175 00 to 185 00
NEW ORLEANS.		
Cattle, Texas beeves, choice.....per head..	40 00 to ———	40 00 to ———
first quality....do.....	35 00 to ———	35 00 to ———
second quality..do.....	30 00 to ———	30 00 to ———
western beeves.....per cental..	4 50 to 5 50	4 50 to 5 50
milch-cows.....per head..	40 00 to 90 00	40 00 to 90 00
Sheep.....do.....	2 00 to 6 00	2 00 to 6 00
Swine.....per cental..	6 00 to 8 50	6 00 to 8 50
Horses, good condition.....per head..	——— to ———	150 00 to 200 00
plugs.....do.....	——— to ———	100 00 to 150 00
common.....do.....	——— to ———	40 00 to 80 00
Mules, well broken, first-class.....do.....	——— to ———	225 00 to 275 00
second class....do.....	——— to ———	175 00 to 225 00

FOREIGN MARKETS.

WHEAT.—In the British isles the spring temperature up to the middle of May was very unfavorable to vegetation and discouraging to farmers. Night-frosts have been injurious to the more delicate grains, and have retarded, if they have not seriously injured, the hardier wheat-crop. The continued pressure of these abnormal conditions of growth caused general apprehension in regard to the outcome of growing crops. The light lands still promised fair crops, but the cereals on heavy soils by no means indicated a high or even average condition. Wheat looked sickly and yellow, and the growth in many cases was irregular and "patchy." Perhaps the speedy approach of warm spring weather would entirely change this prospect, but the period within which such an improvement is possible was rapidly narrowing, and the public mind was becoming more anxious as the unfavorable weather was protracted. The country-markets expressed this anxiety by a universal rise in the value of all unsold stocks of grain. The trade of the metropolis was firm, with a steady demand for the continent. Wheat during the week had advanced 1*s.* per quarter. The steadiness of this demand for export indicated a new cause for anxiety in a deficiency in regions which have hitherto constituted a resource for supply. The inquiry for export embraced not only stocks on the spot, but also cargoes on the coast and *in transitu* from Australia and California, and these at the highest market-prices.

The same class of unfavorable conditions retarded the grain-crops of France, and, with the exception of a few favored districts in the south, the general aspect of grain-farming is anything but cheering. Germany also looked with apprehension to short crops, and purchases have been made for direct shipment from America, Russia, and other great grain-fields to meet an expected scarcity. Still later French reports present a less gloomy aspect of affairs, and give rise to hopes in certain quarters that grain prospects are on the mend. In the grain-growing regions of Eastern Europe there is a considerable improvement in the prospects of the growing crops. At Algiers the weather was all that the grain-farmer could desire. At Alexandria, Egypt, small supplies checked business.

The sales of English wheat during the week closing May 20 amounted to 44,989 quarters, at 45*s.* 1*d.* per quarter, against 62,370 quarters, at 42*s.* 2*d.*, during the corresponding week of 1875. The London averages were 45*s.* 3*d.* on 2,981 quarters. The imports into the United Kingdom during the week previous, ending May 13, amounted to 660,093 cwt. The following week opened with considerable firmness, though the trade was not remarkably brisk. Fresh supplies of English wheat were small and readily cleared out at previous prices, or with considerable advance. In Mark Lane, Essex, and Kent, white brought 43*s.* and 52*s.* per quarter; ditto, red, 40*s.* and 47*s.*; Norfolk, Lincolnshire, and Yorkshire red, 40*s.* and 46*s.*; Dantzig mixed, 52*s.* and 56*s.*; Königsberg, 50*s.* and 54*s.*; Rostock, 50*s.* and 53*s.*; Pomeranian, Mecklenburg, and Uckermark red, 48*s.* and 50*s.*; Shirka, 43*s.* and 45*s.*; Russian hard, 45*s.* and 46*s.*; Saxonska, 47*s.* and 48*s.*; Danish and Holstein red, 46*s.* and 49*s.*; American red, 44*s.* and 54*s.*; Chilian white, 47*s.*; Californian, 51*s.*; Australian, 51*s.* and 53*s.*

In Liverpool British white was quoted at 9*s.* 8*d.* to 10*s.* 2*d.* per cental; ditto, red, 9*s.* 4*d.* to 9*s.* 10*d.*; Canadian white, 9*s.* 6*d.* to 10*s.*; Red Club and Golden Drop, 9*s.* to 9*s.* 9*d.*; American red, winter, 9*s.* 6*d.* to 10*s.* 4*d.*; No. 1, Minnesota, 9*s.* 4*d.* to 9*s.* 9*d.*; No. 1, spring, 9*s.* 4*d.* to 9*s.* 10*d.*;

No. 2, spring, 8*s.* 8*d.* to 9*s.* 6*d.*; India, 8*s.* to 9*s.* 6*d.*; Egyptian, 6*s.* 10*d.* to 8*s.* 9*d.*; Californian, 9*s.* 8*d.* to 9*s.* 11*d.*; Club, 10*s.* to 10*s.* 4*d.*; Chilian, 9*s.* to 9*s.* 6*d.*; Australian, 10*s.* 4*d.*

In Paris choice native wheat had risen to 53*s.* 7*d.* and 55*s.* 5*d.* per quarter, and other sorts ranging down to 50*s.* and 51*s.* for ordinary grades.

FLOUR.—The imports of flour into the United Kingdom during the week ending May 13, amounted to 83,992 cwt., against 95,811 the previous week. The demand had improved, but no change in prices was noted. In Mark Lane the best town-households were quoted at 36*s.* and 43*s.* per sack of 280 pounds; best country-households, 35*s.* and 36*s.*; Norfolk and Suffolk, 28*s.* and 30*s.* Of foreign flour, French brought 30*s.* and 35*s.* per sack; American and extra, 22*s.* and 27*s.* per barrel of 196 pounds. At Liverpool, English and Irish superfines brought 36*s.* and 38*s.*; ditto, extra, 39*s.* and 41*s.*; Trieste, 50*s.* and 57*s.*; Chilian, 34*s.* and 35*s.*; Californian, 35*s.* 6*d.* and 38*s.*; American Western and extra State, 22*s.* and 25*s.* per barrel; Baltimore and Philadelphia, 22*s.* and 26*s.*; Ohio and extra, 23*s.* and 26*s.*; Canadian, 23*s.* and 27*s.*

At Paris the range from ordinary brands to the Mark D'Arblay was 38*s.* and 42*s.* per 280 pounds.

MAIZE.—In Mark Lane, London, white maize was quoted at 28*s.* and 30*s.* per quarter; yellow, 27*s.* and 28*s.* In Liverpool, American white and mixed brought 26*s.* 3*d.* to 26*s.* 9*d.* per 480 pounds; Salatz, 30*s.*; Danubian, 26*s.* to 26*s.* 6*d.*